Gleanings in Bee Culture

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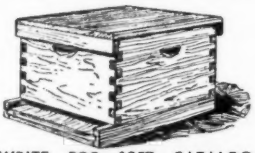

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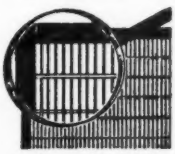

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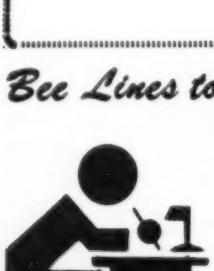
Bee Lines to The Editor



Propolis Pete Prefers to Remain Anonymous

"In response to your query as to whether readers would like a column for letters, I say yes! The feature 'Bee Lines to the Editor' used to contain much interesting material and I always looked for it.

"I'd like to say that 'Live and Learn' gives my morale a great boost. It is comforting to know that the things that puzzle me, puzzle Propolis Pete—and the things that go wrong for me, go wrong for him. In fact, I think he must peek at me in my bee yard. Who is he? Where does he live? If you won't tell, give a clue. I like his stuff but the mystery irks."—A. J.

Take the Honey, Leave the Money

"The roadside stand in that picture, page 555, September Gleanings, has been replaced by a replica that is almost the same size and looks the same. I think that picture was taken about 1949 or 1950.

"I built another honey stand using the old one as a pattern and put it out on the road. This time there was no one to serve the customers so I put a small typewritten sign on the rack with prices and saying 'Serve yourself'. I leave a small jar with some change in it at the front. To date after two months we have not lost any honey or money. It is too early to say much but it looks like it will work.

"Some of the old customers have come back but I do not know what percentage of sales are repeat because we see very few of the purchasers. The honey is put on the stand on Monday morning and each night I check and replace what has been sold."—R.E.G.

Monthly HONEY Report

WALTER BARTH, Field Editor

THE NATIONAL HONEY PICTURE is starting to crystallize and the picture shows a very spotty harvest. Some parts of a state will be poor because of drought and another area will be doing well. Arizona, Colorado, Texas, New York, Pennsylvania, and Vermont show these symptoms, as do many other states.

The honey yield in northern California appears to be low so far with lima bean just starting to yield now (Sept. 1). Bees have not done well on alsike clover and alfalfa, and star thistle has been slow to yield. Prospects are only fair for a cotton flow. Good honey plants yielding poorly seems to be the case in Washington state, too. Prices on the west coast seem to centralize at 10½ cents for amber and 13 to 14 cents for white honey. On the retail side, a five pound bucket of good clover or sage honey sells for $1.49, with one pound jars selling at 41 cents.

Producers Agree on Prices

While the honey flow is spotted in the mountain states, one thing isn't: the prices wanted by the producer. All of our producer reporters are asking 15 to 16 cents for fine white honey in 60's.

Here in Texas the crop is above average, thanks to early rains. Clover produced nicely and a good cotton flow is on now. Normal fall rains should encourage a fair fall crop. Honey prices for Texas and other southwestern states are crystallizing at 12½ to 13 cents for white honey and 10½ to 11 cents for amber. In many instances this is with the agreement that the cans are to be returned. The retail prices for five-pound jars are settling at $1.29 and one-pound jars from 37 to 39 cents.

The price situation is a little different in the South where honey is a little scarce in producers' hands. This has probably resulted from a poor Florida showing and the partial failure of sourwood in many good producing areas. Beekeepers are asking 15 to 16 cents for good white honey in sixties and 14 cents for amber. On the retail picture the five-pound jar brings $1.50, and 40 cents for the one-pound container.

Iowa Expects 80-pound Yield

In the midwest, July was dry and hot, and this cut the honey flow from clover. A late flow doesn't look probable either and so it is likely that the crop will be short in that area. Iowa looks for about an 80-pound yield with extracting well along. Beekeepers in this area have been reluctant to predict prices so that nothing can be reported on this area now.

Apparently beekeepers in the Great Lakes states feel more confident for producers are generally asking 13 to 15 cents for white honey and 11 cents for amber honey. No large crop is expected here but yields have been sufficient to make a fair showing. There is considerable hope too for a good fall flow. Rain can do wonders for goldenrod and aster in this area.

The same moisture conditions and honey plants hold true in New York, Pennsylvania, and New Jersey. Extracting of the summer crop is going fine in New York where a fair to good crop is generally reported. There are exceptions, of course, but this fair crop is yielding a fine-flavored light honey. Beekeepers are asking 14 to 15 cents for light honey and no less than 14 cents for amber. This fine flow extends into central Pennsylvania, but other parts of the state, and New Jersey are finding hard pickings.

In parts of New England, particularly in spotted locations in Vermont, New Hampshire and Rhode Island, a good crop of fine quality has been harvested. Other areas started out well but the bees are rapidly consuming the surplus. Much rain is needed here, especially if a fall crop is to be expected. If no fall crop materializes much fall feeding will be necessary. The situation is at its worst in Massachusetts

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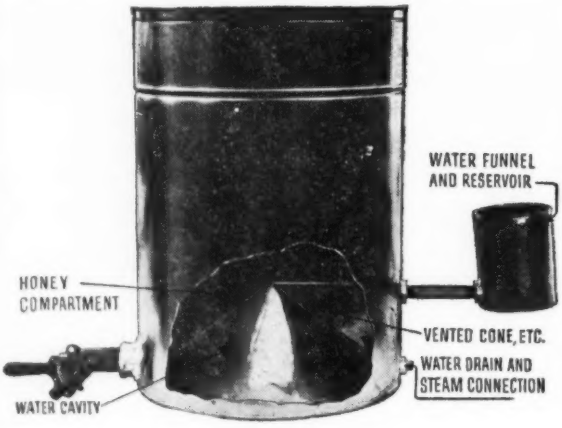

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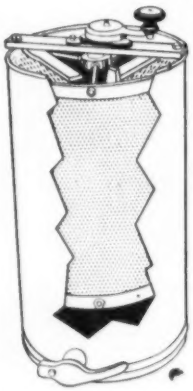

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What Takes Place Within the Hive ✣

DR. J. A. MUNRO**

Dr. J. A. Munro

(A resume of four seasons' observations on brood rearing and honey production in the northern great plains region.)

IT IS BOTH useful and interesting to know what takes place within the beehive. It is there that brood rearing, the basis of colony development, takes place and where the bees find shelter and store honey and pollen to feed themselves as well as their brood. An understanding of these things is an important aid to the beekeeper in meeting management problems associated with honey production and the use of bees for pollination of seed and fruit crops.

During the years when the study reported upon in this paper was in progress (1933-1937) sweet clover was the main source of honey production. Sweet clover started to bloom during the fore part of June but seldom had a full impact on honey production until the latter part of the month; other sources, including basswood in favored locations along river valleys, alfalfa and other plants of lesser importance contributed to the flow. The early spring sources including willow, dandelion, and fruit bloom filled in the period through April and until sweet clover came into production. Except for a widespread drouth, which diminished the nectar flow at times, beekeeping conditions might be regarded as otherwise favorable.

The colonies under observation were the leather colored or three-banded Italian bees, except in 1937 when Caucasian colonies were included for compar-

* Published with the approval of the Director of the North Dakota Agricultural Experiment Station as a part of the investigations conducted under Purnell Project No. 38.

** During the period of this study Dr. Munro was Entomologist and Head of the Department of Entomology, North Dakota Agricultural College and Experiment Station at Fargo, North Dakota. He resigned this position in 1953 and is now Entomologist with the United States Operations Mission to the Philippines.

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ison. The colonies were protected by a shelter-belt of trees and shrubs on the west and by fruit trees on the north and east sides of the apiary. Often it was observed that on sunny days, when it was too cool for the bees to fly far afield, that they readily worked the dandelion, fruit, and other bloom within this protected zone.

On receipt of the packages they were weighed, established in their hives and the net weights of the clusters determined. The package colonies were headed by young queens, whereas the overwintered colonies, except where requeening was done, had queens in their second year. Each colony was allowed at least two standard-depth 10-frame Langstroth hive bodies for a brood chamber.

Management of the colonies was for extracted honey production. Hive bodies containing combs drawn from full sheets of worker foundation were provided and the combs were selected to be as free as possible from drone cells. The colonies were not handicapped by crowding and congestion in the hives or for any lack of honey. A pollen reserve was usually present, but at times due largely to unfavorable weather preventing it from being gathered by the bees it appeared that some of them ran short of pollen for normal brood rearing. Swarming did not occur in the colonies under observation; hive examinations gave warning of any swarm tendency and the queens had their wings clipped as a precautionary measure.

The rate of brood rearing in the colonies was determined by measuring the sealed brood. This was done at 12-day intervals as suggested by Nolan (1925) who observed that "a queen bee lays more eggs than ever develop into adults . . . that since the success of brood rearing activity is to be gauged by the number of adult bees reared, it is evident that this is more closely determined from counts of sealed brood than from any other type of brood counts".

Measurements at 12-day intervals is done because the brood is in the sealed-over cells for the last 12 days of the 21 days required for development. There are approximately 26 worker cells per square inch of comb surface; hence, the number of square inches of sealed brood surface, for any given date, multiplied by 26 represents the brood reared from eggs laid during 12 consecutive days. Where brood was patchy and some cells did not contain brood, due allowance was made.

The counting was done with a frame-holder provided with wire screen of one-inch mesh on both sides. After brushing or shaking the bees from the frame of brood it was placed in the holder and the number of square inches of sealed brood counted. The brood was measured only during the warm part of the day to prevent chilling of the brood.

The surplus honey is the amount represented over and above a uniform and adequate supply allowed for wintering. The weight of the colony cluster (adult bees) was determined by screening the hive entrance at night, after the field bees had returned, to confine the bees for the first weighing which was done in the morning. The bees were then separated from their hive and a second weighing was made. The difference between the first and second weighings represented the weight of the cluster. The number of bees comprising each cluster was computed on the basis of 3337 bees per pound. This is the average number of bees per pound determined by Nolan (1932) from sample weighings of adult bees from 45 package colonies at Beltsville, Maryland.

Table 1. Brood Rearing and Honey Production in Overwintered and Package Colonies — 1933

Eggs Deposited	Average Daily Brood Rate: Overwintered Colony	Pkg. Colony Estb. Apr. 14 2-lb.
1933		
Apr. 24-May 6	1071	925
May 7-May 18	592	328
May 19-May 31	802	419
June 1-June 12	1024	1188
June 13-June 24	979	1118
June 25-July 6	1141	1148
July 7-July 18	1411	1350
July 19-July 31	1177	1276
Aug. 1-Aug. 12	1086	1309
Aug. 13-Aug. 22	902	1274
Aug. 23-Sept. 4	896	1076
Sept. 5-Sept. 16	322	133
Sept. 17-Sept. 28	6	0
Surplus honey (lbs.)	127	83½

Table 2. Brood Rearing and Honey Production in the Overwintered vs. Early and Late Established Package Colonies — 1934
Average Daily Brood Rate

Eggs Deposited 1934	Overwintered Colonies		Pkg. Colonies Estb. Apr. 7 Weight: 3-lb. 2-oz.	3-lb. 0-oz.	Estb. May 8 3-lb. 1-oz.	2-lb. 15-oz.
Apr. 23-May 5	584	831	610	467	....	....
May 6-May 17	546	691	749	591	....	....
May 18-May 29	297	286	608	539	556	392
May 30-June 10	622	836	780	802	635	524
June 11-June 22	1266	1233	1014	1158	1224	1121
June 23-July 4	1394	1330	991	1243	1419	1096
July 5-July 16	1207	1108	942	1080	1251	1223
July 17-July 28	1145	1108	890	844	714	92*
July 29-Aug. 9	852	835	845	830	448	991
Aug. 10-Aug. 21	1028	673	548	855	389	992
Aug. 22-Sep. 2	929	532	759	777	143	840
Sep. 6-Sep. 17**	136	263	551	455	123	384
Surplus Honey lbs.	123½	134½	146.	148.	98.	47¼
Weight of (Aug. 18) Clusters - lbs.	14.	13½	10¾	11¾	11.	10½
Number of (Aug. 18) Bees	46,718:	44,050:	33,873:	39,210:	36,707:	35,039.

*/Requeened. **/Brood counting unavoidably delayed.

Table 3. Brood Rearing and Honey Production in Overwintered and Package Colonies — 1935
Average Daily Brood Rate

Eggs Deposited 1935	Overwintered Colonies		Package Colonies (Estb. May 7) Weight: 3-lb. 0-oz.	2-lb. 8-oz.
Apr. 24-May 5	299	466	....	....
May 8-May 19*/	970	11**/	594	502
May 20-June 1	1181	1065	572	448
June 2-June 13	1283	1202	972	946
June 14-June 26	1265	1314	900	1061
June 27-July 9	1139	1414	957	911
July 10-July 21	944	1376	822	758
July 22-Aug. 3	758	1168	790	752
Aug. 4-Aug. 15	952	1100	919	778
Aug. 16-Aug. 27	1003	1092	961	887
Aug. 28-Sep. 8	942	719	883	835
Sep. 15-Sep. 26*/	750	461	543	658
Surplus Honey lbs.	291.	228.	145.	142.

*/Brood counting unavoidably delayed. **/Requeened.

Table 4. Brood Rearing and Honey Production in Italian and Caucasian Package Colonies Established May 9, 1937.
Average Daily Brood Rate

Eggs Deposited 1937	Italian Colonies Weight: 3-lb. 1-oz.	3-lb. 3-oz.	Caucasian Colonies 3-lb. 1-oz.	3-lb. 2-oz.
May 21-June 1	609	764	518	716
June 2-June 15	663	1019	677	806
June 16-June 25	1185	1566	1204	1154
June 26-July 7	1503	1367	917	1179
July 8-July 19	1076	1189	839	963
July 20-July 31	1393	1616	1050	1191
Aug. 1-Aug. 12	1341	1539	1015	1109
Aug. 13-Aug. 24	1215	948	840	978
Surplus Honey lbs.	112¼	140¾	110½	141.

A review of the Tables 1 to 4 show that the highest daily average brood rate was 1616 and was made by an Italian package colony during the 12-days period of July 20 to 31, 1937.

It will be noted in Table 1 (1933) that there is an abrupt decline in the average daily rate of brood rearing following the period ending May 6. This approximated a 45 per cent decline for the overwintered colony and 65 per cent for the package colony. There was evidence that this setback was due largely to a pollen shortage; and so, it was decided to guard against a repetition of this experience the following year—at least in the package colonies.

Accordingly, in the spring of 1934 when the packages were being installed, each package was furnished with several pollen-laden combs (saved over from the previous year) along with an ample supply of honey. The overwintered colonies had no further pollen than remained in their hives from the wintering period and what they could forage for in the spring. Apparently the overwintered colonies suffered from a severe lack of pollen, as they sustained a 53 per cent decline in brood rearing in the 12-day period following May 17, while the package colonies which were fortified with pollen declined only 14 per cent. Possibly if the package colonies had been more generously supplied with pollen they would have maintained even a better rate.

In the spring of 1935 all colonies were well supplied with pollen, but despite this, the package colonies made a very poor showing, both in brood rearing and honey production, in comparison with the overwintered. Apparently this was due almost entirely to Nosema disease which caused serious dwindling of the package bees, from the outset, but did not appear to spread to the overwintered colonies.

The advantage of early establishment of package colonies is strikingly brought out in Table 2 (1934) which shows the two package colonies, established April 7, to have produced 50 per cent more surplus honey than the package of approximate weight established a month later (May 8). Since the other late established package got a set-back from the loss of its queen in July it is not considered in the comparison.

The size of the colony clusters reached by August 18 as shown in Table 2 (1934), while of interest from the standpoint of colony development, appear to have no correlation with the amount of surplus honey produced. Many of the adult bees comprising the weighings were probably reared too late in the season to have taken an important part in gathering the honey crop. The bees which are produced in time to take fullest advantage of the main flow are the ones which contribute most in honey production.

Brood rearing studies were not conducted in 1936 but were resumed in 1937. Table 4 (1937) shows a comparison in performance of Italian and Caucasian package colonies. The Italian colonies produced an average of 25 per cent more brood than the Caucasians over the corresponding period, yet the honey production averaged about the same. Observations over more seasons with a larger number of colonies would be desirable in making an evaluation. It would appear from this preliminary test that although the Italians may be more prolific, yet the Caucasians may be more efficient nectar gatherers in this northern area.

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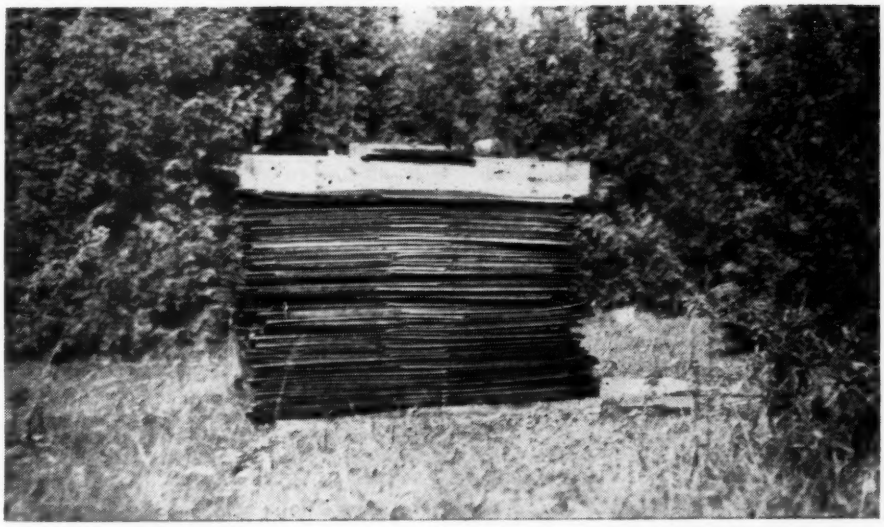
"They're actually minnows. He used honeybees for bait and when the minnows swallowed them they got stung!"



No. 1. The way jackets are piled up for summer.

Wintering Bees in Corrugated Cardboard Jackets

MICHAEL BOCZKO, Lisbon, New York

THE WOOLLY caterpillar is hurrying across the road — only he seems to know where. In the pastures there are pods on the milkweed. They say this means frost in the next seven days. It is only the middle of August, but confidence in summer has faded, and there seems to be an air of urgency everywhere up here in the North Country.

To the beekeeper it is natural now to think about preparing his bees for what's coming — for it will come soon. If you are a stranger, and ask a native about our climate, he will tell you that up here we have only winter and two months of poor sleighing. The St. Lawrence Valley seems to be more Arctic than Temperate and we have to provide good winter protection for our bees. Natural windbreaks and plain wrappings are not enough — we found that out.

Up here in winter we have two kinds of wind we could do very well without. One from the North, the other from the East. Since there are only a few strands of barbed wire between here and the Northpole, we get the first one undiluted. The temperature will drop way below zero and will stay there sometimes for two or three weeks. When it turns and blows from the East, the mercury will rise a few notches, and we are in for three or four days of storm. This wind feels more disagreeable and penetrating. It can blow a snowbank through a keyhole into the house.

We wintered bees successfully with heavy packing for many years, but heavy packing had several drawbacks— cost of material, labor, and time.

Five years ago, we heard rumors that the very best beekeepers across the River in Canada are wintering bees in corrugated cardboard jackets with good results. Wilburt Wahl, from Clayton

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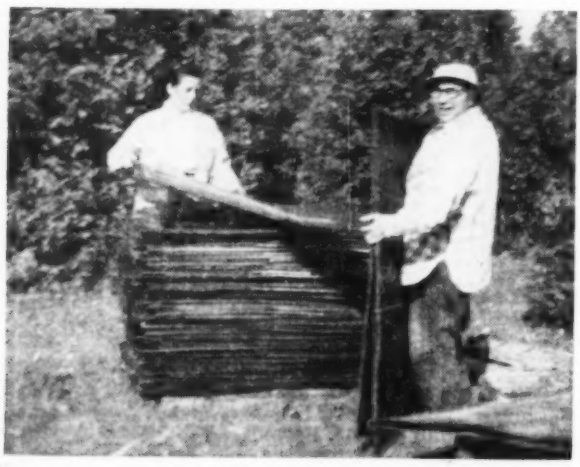
No. 2. Putting in entrance cleats with 3/8-inch openings to keep out mice.

went over to Victor Mesley, in Kempville, Ontario, to find out — and sure enough, he even brought back a sample. Immediately, a few of us got together and through our Co-op. had ordered enough for a good try-out. That winter was a tough one, and we waited for spring anxiously. When it finally came in the middle of April, we could not see any difference between the heavy packed hives and the hives which had only these jackets. That year all of us who tried it, ordered enough jackets for all our hives. Because I winter about half of my bees in three supers, all my jackets are made to cover a three-story hive.

These jackets are large enough to have about a bee space all around when on the hives. For strength they are made of double corrugated cardboard, and dipped in hot paraffin to make them waterproof and to last. They were made in a Syracuse box factory and cost 85c each without paraffin. And mine were dipped in hot paraffin by the Cleveland Container Co.'s Ogdensburg plant at 52c each. By the way each jacket absorbed four pounds of paraffin. Their total cost complete was $1.37 each, and if well taken care of, we expect they will last from eight to ten years. So, their cost is considerably less than the conventional packing material.

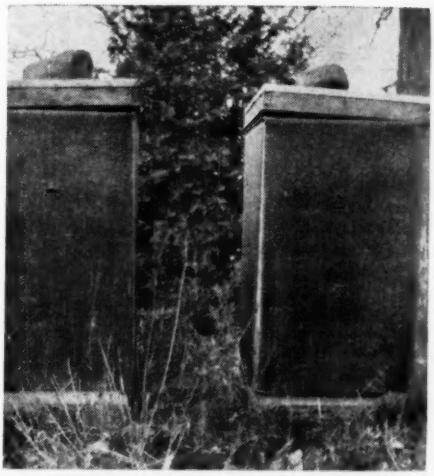


No. 3. Start to put on jackets.

Now labor and time. Last fall I had taken these accompanying pictures in one of our yards which is a fairly large one—72 colonies. A yard of this size used to take about a good day's work with straw and black paper. However, if you take the bother and look at these pictures, the story is different.

No. 4. The way it looked after the girls finished packing.

I am one of those few lucky beekeepers. My wife doesn't trust me entirely with our bees. She loves to go with me to the bee-yards and see to it that everything is done properly. Especially she enjoys to go with me in the fall and the two of us do the packing. This particular day was one of those few real pleasant ones we have here in the fall, and Mrs. Milton King, our good-looking neighbor and her best friend, who never had been anywhere near bees before came with us, just for the fun of it.



No. 5. Close up of hives with jackets. Ready for winter.

We arrived in the yard, I started up the smoker, then snapped three pictures. The first one of the stack of jackets is the way they are piled all summer in each yard. The next two show the ladies taking in the situation. Then I was told to take the dog and the gun, maybe I'd see something—and I did. About two hours later, I came back with nothing to show. Found the girls resting a little ways from the bees. All the hives were properly jacketed and they had finished taking the rest of the pictures. My wife proudly told me that they didn't even put on the veils or used the smoker which was out and cold when I picked it up. Her left eye didn't quite match the right one, but who am I to find fault?

No. 6. Upper entrance notch in the inverted inner cover.

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No. 7. Jackets are taken off in spring.

No. 8. In the spring after the jackets are off.

Other advantages: Cattle do not seem to be interested in the bees in the fall when they are in the hives. This is a dairy country, and specially in the fall young stock, heifers and young bulls, are all over. For some reason or other they can't resist black paper. It used to be a heartbreaking sight when even one jumped the fence. Many times we had to repack whole yards. Sometimes during winter, deer will tip over a hive here and there, but it doesn't seem to hurt the bees, for in these jackets the hives don't fall apart. It is interesting to note, that so far we haven't lost a hive of bees that was knocked over in these jackets. It is possible that they would winter better if they were all laid on their side or back for winter.

In the spring when they come off from the hives, they can be neatly piled up in the yard, ready and handy to put back on in the fall. Quite a few of my jackets are doing other duties when not protecting bees. They make an ample waste basket. They are very handy to carry dead leaves when we rake them up in the fall from our lawn. They protect my wife's rose bushes in winter.

We weigh all the two-story hives in the fall. Each has to be 130 pounds minimum gross weight (bottom boards and telescope cover included) to insure ample stores. If we have to feed syrup, there is ample room for 10-pound pails inside the jackets. We don't have to put on empty supers to protect the pails.

Hives that are two-story high get a few handfuls of straw to fill out the empty space. The ones that are three high get nothing, just the jackets. When the four flaps are folded over the inner cover, or straw, we put on the telescope cover and a fair-sized rock to keep it from blowing off.

And when a little later, the wind will turn East, the landscape and hives disappear under the relentless white accumulation, I find myself repeating over and over, the refrain from a beautiful old French Canadian ballad.

The wind she' blow up into a gale,
And later she'll blow some more.
You will not drown in the Lac San. Pier,
If you only stay on the shore.

A Grateful Bee

"WHILE bathing off the coast, a bee on the sea climbed on to my arm, and so I waded back to shore, where dozens of people watched me while the bee dried herself for ten minutes and straightened her wings on my arm in the sun. She then flew off, but at 200 yards she turned and flew straight back to me. An astonished crowd watched her circle very close round my head three times. Then she flew away."—Quoted by "Beekeepers' News," from "Sunday Express," June, 16th. — The Irish Bee Journal, August, 1957.

The Impossible Career

A Life of Francois Huber

ANN B. FISHER

Introduction

THE STORY of Francois Huber is a phenomenal thing. He was a Swiss entomologist, born about 200 years ago. He is considered the greatest student of the honeybee that ever lived, yet he was totally blind from childhood.

Bees had been observed by man for hundreds of years, because the honey they made was man's principal means of sweetening. Yet not much was known about bees until Huber's wonderful investigations.

As his eyes he had his wife, a faithful servant, and his son. They did the looking and he did the thinking. They used their eyes to observe the things he suggested; then they told him in detail what they had seen. He analyzed and evaluated, and then he would tell them what to do next. By this means he found out more about the honeybee than any one man has ever been able to learn before or since.

Parents

Francois Huber came from a cultured, well-to-do family of Geneva, Switzerland. He had an uncle who was a famous geologist. An aunt was a writer on religious subjects, and also translated the famous **Spectator** papers of Addison and Steele.

His father had once been in the army. He had an interest in natural sciences and later wrote a book on the flight of birds, published in Geneva in 1784. Francois inherited keen powers of observation and a great love of nature from him. He was a very talkative and humorous person and belonged to the famous group of friends of Voltaire. He was also an amateur poet, painter, and sculptor, made landscape silhouettes, and was known as somewhat of a musician.

Childhood

Francois was born in Geneva, Switzerland, on July 2, 1750.

At a very early age he showed a liking for natural sciences in which he was encouraged by his father. He became interested in the honeybee from his admiration of the writings of Reamure, a well-known French scientist who had devoted much of his life to the study of insects. Later he met Charles Bonnet, a leading Swiss naturalist, who encouraged this interest in which Francois became so engrossed as to injure his health and cause a weakness of his eyesight.

For his formal education he attended college lectures, becoming greatly interested in literature. He studied physics with de Saussure, a famous French geologist and naturalist. Chemistry he studied with an elderly relative who later ruined himself in searching for the philosopher's stone, that famous substance which was supposed to turn everything it touched into gold.

At about the age of 17, Francois fell in love with a young lady whom he met at dancing school, Marie Aimee Lullin, a daughter of a magistrate of the Swiss Republic. This was an event leading to many years of uncertainty for Francois.

[*Miss Fisher was aided in writing this article by her father, Howard T. Fisher, an architect and engineer in Chicago, Ill., who, starting at the age of 10, has kept bees for more than 40 years.—Ed.]

Going Blind

At the age of 15, from his constant studying, the weakness of his eyes greatly increased. To make things worse he took to reading romances at night. When his parents objected and insisted he go to bed without a lamp, he even used the moonlight to read by.

The difficulty with his eyes becoming more pronounced, he was taken to Paris by his father to consult celebrated specialists on both his general health and his eyesight.

For a rest from his studies he was advised to go to the small peasant village of Stains near Paris. There he followed the life of a simple farm-hand for several months, developing a taste for rural existence which lasted the rest of his days.

This period restored his general health, but did not cure his ever-increasing blindness. His doctor recommended against an operation on his eyes and told him the probability that his sight would slowly lessen to the point of total blindness. To prepare for this tragedy, Francois devoted himself during the next few years to storing up for his later use, memories of all the things he saw around him.

Marriage

In spite of his disturbing predicament, Francois and Marie, the young lady he had first met at dancing school, continued their interest in one another. They felt so in love that neither could imagine a separation, and she considered herself doubly pledged to him because of his infirmity. In spite of this, Francois feared that she might not remain faithful to him in view of his increasing blindness. He continued as far as possible to do the things he had done before, and pretended to be able to see more than he really could.

In addition to the other troubles weighing on his mind, Francois had to contend with an ever increasing opposition to their romance on the part of Marie's parents and friends. As his blindness increased, their love became more certain, but her parents totally forbade the marriage. Unable to marry without their permission, she decided to wait until the age of 25 when she could legally marry without consent. During the following seven years she was sought by many suitors but she bided her time, devoting herself to helping the ever more helpless Francois. When she was finally free by law to marry, her father still withheld his permission, and she was led down the aisle by a maternal uncle.

Forgiven later by her parents, the marriage was highly successful. For nearly 40 years Francois and Marie lived happily together. They had a daughter and a son. Marie was his reader, his secretary, and his observer. Of her, Francois later said, "As long as she lived, I was not sensible of being blind."

Adulthood

Francois was financially well off throughout his life and his family took care of everything that needed to be attended to. As a result he was generally able to do those things which he wanted to do most and which were within his physical capacity.

He had a reflective mind as well as a sense of humor and the combination made him cheerful. His brain demanded constant employment and he showed interest in a wide range of subjects.

Francois enjoyed the life that went on around him. The company of young people made him happy and he took much pleasure in helping them. He was especially fond of animals. Above all he liked conversation. He enjoyed pretending that he could see, and would praise in detail the elegance of a dress which he had never seen or the beauty of a landscape which he knew only from the recollection of his childhood.

He had a longing for independence. He would take walks near his home, guided by threads stretched between trees, with knots to tell him of his direction and position. Desiring to be able to correspond with absent friends without being a burden to others, he had a servant develop a special printing device which he was able to operate by himself. He could sort out raised letters in a small tray and then print them with the aid of a sheet of inked paper.

Poetry, music, and singing enabled him to express himself, but he kept his mind busy principally through his interest in the scientific study of all aspects of the life of the honeybee.

Helpers

Francois obviously was not able to do

the things that were to make him famous without the aid of assistants. The first and most important of these was a peasant by the name of Burnens who had been employed originally as a servant. Though entirely without education, Francois found him to be extremely intelligent and developed his talents as a secretary and observer. He had a natural thirst for knowledge, infinite patience, energy, and enthusiasm.

For years Francois and Burnens worked side by side upon their fascinating work. Francois would give detailed instructions for the experiments to be performed and his assistant would carry them out. As Burnens reported the results, Francois would cross-examine him, evaluating the work and analyzing the problem from all angles. He would then suggest the further experiments to be performed.

Speaking of his friend, Francois said, "He counted fatigue and pain as nothing compared with the great desire he felt to know the results".

Coming from the country and without preconceived ideas, Burnens was able to be completely factual and proved a keen and faithful observer. As a check on his accuracy, however, Francois sought the help of his wife, friends, and later his son.

"I am much more certain," said he one day to a scientist friend, "of what I taste than you are, for you publish what your eyes only have seen, while I take the mean among many witnesses."

Later, after Burnens became a magistrate in his village, Francois was helped in a similar fashion by his wife who had been his reader and means of contact with other scientists.

Francois' son Pierre helped on later work. He had developed an interest in insects paralleling that of his father and became a scientist in his own right, producing a book on the habits of ants and other insects.

Scientific Work

To help him in his studies Francois developed a special hive that had 12 frames hinged on the edges like the leaves of a book, each frame holding a sheet of comb with the cells opening to the sides. The modern hive of movable frames had not yet been invented and this "leaf hive" permitted easy observation of activity on each separate comb throughout the colony. He also developed a glass-walled hive one comb in depth, permitting continuous observation of all that was going on in the life of the colony. These aids were of the greatest importance in his studies.

Francois' life work embraced a tremendous variety of investigations. He studied the necessity of oxygen in the hive for respiration and discovered the method used by the bees to achieve ventilation through fanning at the entrance. He investigated the use of pollen, finding that when mixed with honey it was the principal food for the larvae.

He spent much time on the study of beeswax and its elaboration. He investigated the role of honey in the origin of wax as an excretion from the abdomen of worker bees. He devoted long study to the exact methods used by the bees in building their combs. The size of the cells and their purpose was investigated. He discovered that propolis, used for crack filling and the narrowing of entrances, was a resin from buds and that it was carried in the bees' pollen baskets on their hind legs.

He went thoroughly into the subject of brood rearing, discovering that the larvae spun cocoons in the capped cells. He found that the antennae were used for feeling and for smelling. He demonstrated that with the loss of one by a queen there was no material change in her behavior, but that with the loss of both she would lay eggs anywhere and become inacceptable to the colony.

He proved that bees have a memory. In experimentation with feeding honey on a window sill, he found that bees would appear months afterwards.

It had been stated, but never previously proved, that in emergencies a young worker larva could be changed into a queen through a change in cell size and diet. He also found out that a virgin queen hatching previous to other queens will kill all possible rivals while still in their cells, and he studied the great rivalry between adult queens. He showed that worker bees will surround and kill a strange queen, and develop methods of safely introducing new queens into queenless colonies.

The study of the mating of queens was one to which he devoted much time, and the serial impregnation of the

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queen was conclusively proved by him. He discovered that a queen may mate more than once, but that typically a single mating lasts for years or life. He proved that an unmated queen will lay, but can lay only drone eggs.

He went into the origin of swarms and their timing. He discovered that if a cloud passed the issuance of a swarm might be delayed for hours. He reported on the killing of unwanted drones before the winter season. He found that in a queenless colony workers could get so desperate, when there were no worker eggs or young larvae, that they might start laying themselves, but that in that event they could lay only drone eggs. He went into the subject of wax moths, the bees' great enemy.

Francois' life work presented a brilliant example of the use of the inductive system of reasoning—working from the particular to the general, from the individual to the universal. His remarkable discoveries earned him membership in the Academy of Science in Paris and many others.

His discoveries were first presented in a book entitled "New Observations on Bees" published in Geneva in 1792, and republished in Paris in 1796. An expanded second edition, written with the aid of his son, was published in two volumes in Paris in 1814. An English translation appeared in 1806, with a second edition eight years later. In addition he wrote many articles through the years dealing with specialized investigations, the majority of which related to bees.

Francois' writings were unusually vivid and clear. He was noted for the picturesqueness of his style and his ability to form word-pictures, making his books easy to read with understanding and pleasure.

His writings were received with great interest, but in view of his blindness, were at first properly mistrusted. One scientist totally disagreed with him and wrote at length opposing his statements. Francois' opponents could not imagine how a blind man could be taken seriously as a scientist, and tried to discredit his observer Burnens as a completely uneducated peasant.

O'd Age

Following his wife's death Francois resided in the home of his married daughter in Lausanne. While there he heard of the stingless bee that existed in Mexico and managed through the aid of a friend to procure a colony which he studied with much pleasure.

In his last years he retained his full faculties and continued to talk and correspond with friends. He died at Lausanne Dec. 21, 1831, at the age of 80.

Significance

In evaluating Francois' scientific work the interesting question arises whether his blindness might possibly have been an asset, or whether he would have been a greater scientist with the use of his eyes.

If he had been able to see, with all the resulting opportunities open to him, he might never have become a serious scientist. In view of the activities inevitably involved in a more normal social life he might not have been able to apply himself as intensively to his work. Able to depend on his eyes he might not have been as thorough in his checking and rechecking of every fact. And finally he might not have been forced to think as deeply or as imaginatively.

Francois Huber was a great scientist. He is certainly the very greatest of the scientists that have studied the subject of the honeybee. His achievements were due primarily to the imaginative planning of his researches, and his insistence upon the greatest accuracy in their execution. In his field of study he accomplished more than all of the scientists before him and more than any since. And he will always be an inspiration to the blind and the handicapped.

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How Bees Help Dairying

A. B. KENNERLY, College Station, Texas

Perry Connally (left) discusses with county agent A. B. Simmons prospects for vetch pollination for the coming season.

"BEES ARE just a hobby with us," says Perry Connally who has a hundred colonies on his dairy farm in Hopkins County, Texas. But when you question him further it is soon apparent that bees are more than a hobby by two counts—sale of bottled honey and vetch pollination.

Perry got started in beekeeping when he was the age of ten. He and his brother had read something on bees from the town library—just enough to whet their appetite for more information. They wrote to the Department of Agriculture in Washington for their bulletins on bees. "Those fellows must have been waiting a long time for somebody to write them for beekeeping bulletins," Perry exclaimed with a teasing laugh. "They unloaded nearly a truckful of bulletins on us."

During their boyhood days, Perry and his brother kept a few hives of bees in town where they lived. It was not until he moved to the dairy farm that Perry began keeping bees in earnest.

When the Bible speaks of the land of milk and honey, there is more than a land of abundant prosperity. Beekeeping and dairying made ideal partner enterprises on a farm. No dairyman will long prosper without the benefit of clover and grass pastures, and clover pastures will not produce their best without bees to boost pollination. The pastures,

(Continued on page 637)

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The Effects of Various Levels of Fertilizers on the Growth and Nectar Secretion of Snapdragons (Antirrhinum majus)

F. R. SHAW, A. I. BOURNE, and ROGER MIGLIORINI*

IN THE PAST there have been many observations on the effects of various fertilizers on nectar secretion of plants. Only comparatively recently has there been any carefully planned research on this matter.

Schontag, 1952, conducted some investigations on the effects of nitrogen, potash and potassium on nectar secretion of raspberry, gooseberry, and currants. He was unable to correlate nectar secretion with these chemicals.

Beutler, 1953, brought together the more important references dealing with the effects of fertilizers on nectar secretion. However, there was considerable lack of agreement of the observations reported by earlier authors.

Shuel, 1957, has made the most exhaustive study of the effects of various levels of nitrogen, phosphorous and potassium on the secretion of nectar by snapdragons and by red clover. He concluded that nectar yields in snapdragon were substantially less at the higher level of each element. He indicated that high nitrogen levels resulted in luxuriant plants which produced little nectar.

High ratios of potassium to phosphorus resulted in strongly vegetative plants with relatively few flowers. High levels of phosphorous produced plants which were smaller in size, had abundant flowers, but which produced relatively little nectar.

The present investigations were carried on during the spring of 1957.

Through the courtesy of Dr. Shuel, we received information which permitted us to follow the technique he had employed. Shuel suggested that we use the following levels of fertilizers.

Table 1.

Treatment	Nitrogen PPM	Phosphorous PPM	Potassium PPM
Low	20	20	20
Medium	60	60	60
High	180	180	180

The snapdragons were grown in washed sand in plastic pots. The plants were grown at a temperature of 60°F. and received the nutrient solutions twice a week. If additional water was necessary, it was provided.

At the time that the plants flowered, the length of stem from the soil lime to the top of the flower spike was determined. The number and size of the blossoms were recorded. Then the nectar was removed.

We attempted several techniques to remove the nectar including the use of a centrifuge, a hypodermic, capillary tubes, and finally a ground off hypodermic needle. The last method proved to be best.

Various methods were attempted to determine the amount of nectar produced. Micropipettes, absorption of nectar on filter paper which was weighed on analytical balances and other techniques, were employed. We were unable to obtain consistent results with any of these methods and finally settled on a method which involved the number of blossoms necessary to produce sufficient nectar to permit a reading of the sugar concentration. Such determinations were made with a B and L Hand Refractometer. If we could secure sufficient nectar from one to three blossoms, we recorded that the plant

* Contribution No. 1275—Dept. Entomology, University of Massachusetts.

Table 2

Material and Treatment	Ht. of plant inches	No. of Blossoms	Width of Blossoms in min.	Sugar conc. nectar	Average no. Blossoms to produce nectar for sugar determination
Nitrogen					
High	28.5	12.4	37.1	43	6.0
Medium	27.8	9.9	36.4	42.6	6.5
Low	28.3	12.1	37.1	36.4	5.4
Phosphate					
High	28.6	11.9	36.7	41.5	5.3
Medium	27.4	10.4	36.5	44.1	6.7
Low	27.9	11.4	37.2	37.5	5.5
Potash					
High	28.1	11.4	36.6	39.8	6.7
Medium	27.7	11.5	36.6	40.9	5.5
Low	27.5	10.6	37.1	42.0	5.9

was secreting copious nectar, if four to eight blossoms were required, we concluded that the amount of nectar was moderate. If more than eight blossoms were required, we concluded that the amount of nectar was minute.

A summary of our data appears in Table 2.

An analysis of the data indicates the following:

Nitrogen Series

In general, the plants producing the higher levels of nitrogen were taller than those receiving medium or low levels. Such plants also produced more blossoms, had a higher sugar concentration of the nectar, but less nectar than plants receiving low levels of nitrogen.

Phosphate Series

The plants receiving the high phosphate were taller, had more blossoms, than those receiving medium or low phosphate. The sugar concentration was highest in the plants receiving the medium level, but the amount of nectar was greatest from the plants which had the highest amount of phosphate.

Potassium Series

The plants receiving the high level were tallest, but had the lowest sugar concentration of nectar and the least amount of nectar. Those receiving the medium levels had the largest amount of nectar. Those having the low level had larger blossoms, and the highest sugar concentration. The amount of nectar was intermediate between those receiving the high and the medium levels.

In general, our data substantiate the findings reported by Shuel. However, in our phosphate series, we found more nectar in plants having the highest amount. Our findings of the effects of potash and nitrogen agree closely with those of Shuel.

From the standpoint of the amount of nectar produced, plants which received low levels of nitrogen and phosphorus and a medium level of potash were superior. However, the sugar concentration was lowest of any of the lots. The highest sugar concentration of nectar was found in plants which had received medium levels of nitrogen and phosphorus and a low level of potash.

We conclude that medium to low levels of nitrogen, phosphorus, and potassium appear to produce more nectar with higher sugar concentrations than do high levels of these chemicals.

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Our Cover Photo

There's nothing like an attractive display of honey in a grocery store to make people stop and look. If they look long enough they are likely to buy some honey, especially during National Honey Week which comes October 28 to November 2. It is sponsored by **American Honey Institute,** Madison, Wisconsin. — Photo sent by Leslie Little.

XUM

Increased Honey Production For Kentucky Beekeepers Through ---

(1) Transferring Bees to Modern Hives
(2) Requeening with Good Stock
(3) Improving Management Practices
(4) Effective Disease Control

WILLIAM G. EATON, Winchester, Ky.

THE PRIMARY DUTY of the honeybee is to cross-pollinate our crops; however, we do not depend upon bees for this purpose in many sections of the State—commercially speaking. Therefore, if an income is to be derived from keeping bees, we must depend solely upon the honey and wax which they produce. In order to accomplish this, we must seek ways of achieving maximum production at a minimum cost, if we are to realize a dollars-and-cents profit.

With this idea in mind, I'd like to share with you, briefly, some of my ideas as to how beekeepers throughout the State can improve their present beekeeping projects, thereby increasing their honey production. I venture to assert that our over-all honey production could be increased by as much as 50 per cent within a period of five years—if generally applied. (This year's estimated crop of honey in Kentucky is 2,992,000 pounds.) An important initial step forward toward the realization of this long-range goal could well be—

Transferring Bees to Modern Hives

Many colonies of bees kept in Kentucky are still housed in out-dated log gums and box-hives and produce for their owners an insignificant quantity of honey when compared with an estimated amount which they might be made to produce—if they were transferred into movable-frame hives and handled by improved methods.

The proper time to transfer bees is in early spring during fruit bloom, generally speaking, using one of the following widely-used plans:

No. 1. Cutting combs from old hives.
No. 2. Drumming out and hiving on full sheets of foundation.
No. 3. Placing new hive over the box-hive.
No. 4. A more modern method, that is not so widely used, although it is a great time-saver and very effective, is to drive the bees out of their old quarters by the use of carbolic acid fumes.

After the bees have become well established in their new quarters where the combs may be freely examined, we can further increase our chances for gathering an increased honey crop by—

Requeening

Requeening consists simply of replacing the old queen (usually black) with a young, vigorous queen—preferably of Italian stock. Colonies may be requeened during any active season of the year if proper precautions are taken to meet seasonal conditions. However, most beekeepers prefer to replace their failing queens during a good nectar flow, since the new queen is accepted better at this time.

A few points to remember in requeening are:

(1) Buy queens from a reliable breeder who has good stock. (Follow his instructions for safe introduction.)

(2) Requeen during a good nectar flow, so far as is possible.

(3) Always remove the old queen and

cut out all queen cells before placing the new queen's cage in the hive.

(4) After introducing, DO NOT open the hive for several days. Otherwise, the bees may kill their new queen.

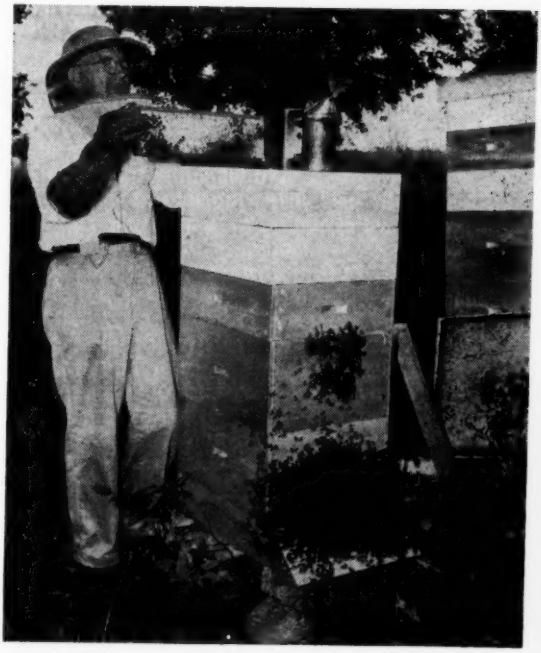
Many thousands of pounds of valuable honey are lost each year by beekeepers who already have their bees in modern type hives, yet do not give their bees the proper attention needed to obtain the available nectar. So another method of achieving increased yields is through—

Improving Management Practices

Remember that we requeen (usually every two years) for a specific purpose - to obtain more bees — thousands more! Therefore, the enlarged, rejuvenated colony will need, above all else, **plenty of room.** This adequate space will be required both for the rearing of young brood and for surplus honey storage.

The practice which the majority of beekeepers follow for colony management, is to use two full-depth supers for brood rearing with at least four shallow supers being available for use as needed for the surplus. By way of further explanation, the two brood chambers are used the year 'round, and they

No. 1. Although the out-dated log-gum provides a good home for a colony of bees, it does not permit the modern-day beekeeper to manage the bees properly.



No. 2. Present-day management calls for the use of at least two brood chambers the year 'round, with plenty of super space for the storage of surplus honey.

XUM

No. 3. The beekeeper appearing in pictures No. 2 and 3 is Mr. R. A. Edwards, who is a retired college professor living in Richmond, Kentucky. Compare his well-kept apiary, which uses present-day equipment and methods of management, with the out-dated log-gum shown in No. 1. Mr. Edwards operates a total of 60 colonies of bees.

are reversed periodically during the early spring and summer build-up period, so that empty combs are always in the top chamber, since bees instinctively work upward. This requires regular attention. The beekeeper should be able to examine the brood nest periodically and to move the combs as needed.

No. 4. One method of disease control, which many beekeepers use, is to prepare a mixture of the prescribed drug with powdered sugar, then dusting it on the diseased brood combs as illustrated. The nurse bees will feed this mixture to the young larva, thus providing a control over disease.

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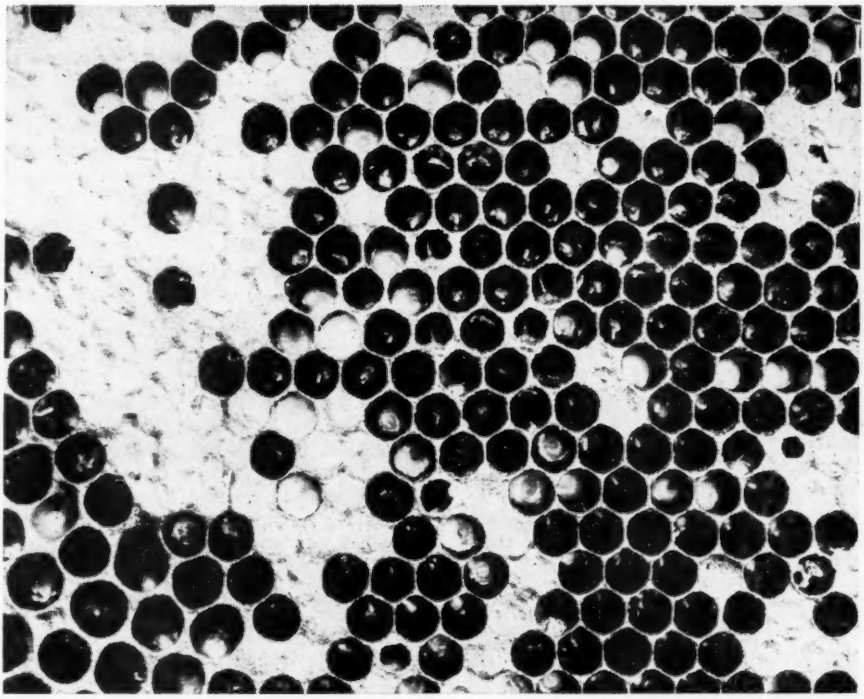


No. 5. A brood comb showing the unmistakable evidence of American foulbrood—the adhering of the larval tongue to the roof of the cell. (Shown at the center of the photo.) Other evidence, such as: the sunken, perforated cell cappings, decaying larvae, and scales is also shown.

Disease Control

The care which bees require in order to gather a fair crop of honey, as well as being kept free of disease, can be given ONLY if, as already mentioned above, the beekeeper is able to examine the bees periodically and to move the combs as needed. Therefore, keeping bees in any other manner is highly unprofitable, and is unlawful in some of the more progressive states.

Many times it is somewhat difficult for the beginner-beekeeper to recognize a diseased colony of bees, however, if a colony appears to be getting weaker and weaker, when all of the others maintain a normal strength, something no doubt is wrong. If, upon examination, dead decaying larvae are found in large numbers, something most definitely is wrong, and a reasonably safe diagnosis could be—**foulbrood,** which is caused by a form of bacteria which attacks and kills young bees in the larval stage. Thus thousands of otherwise productive colonies are lost throughout the country each year, although it has been controlled somewhat since the appearance of the sulpha drugs, and more recently, the terramycins. In any event, the state bee inspector should be called upon for assistance.

For additional and detailed information on any of the above subjects, I suggest that you contact your county agent, asking him to obtain the following educational material for you.

(1) Farmers' Bulletin No. 961. "Transferring Bees to Modern Hives." U. S. Department of Agriculture.

(2) "Kentucky 1955 Honey Production and Marketing Survey." Kentucky Dept. of Agriculture.

(3) Circular No. 288. "Beekeeping in Kentucky." University of Kentucky Extension Service.

(4) Circular No. 341. "Sulphathiazole Control of American Foulbrood." University of Missouri Agricultural Experiment Station.

(5) Circular No. 702. "Productive Management of Honeybee Colonies in the Northern States." U. S. Department of Agriculture.

(6) ARS-33-10 (Agricultural Research Service) "Information About Beekeeping." U. S. Dept. of Agriculture.

XUM

My "Failure" in Beekeeping

CLARENCE E. BLINN, Rocky Ford, Colorado

IN AUGUST OF 1954, I found myself living in a tent among the hills of Korea. Our job was to provide the U. N. troops with insecticides for the control of malaria-carrying mosquitoes, filth-loving flies and lice. One day as I walked through the compound area, I noticed dark-colored honeybees working on the sunflowers and other fall-blooming flora. I tried to follow their beelines, but abruptly halted my pursuit when they flew out over a land mine field.

I asked one of the Korean houseboys if the Korean people raised bees. He said a few of them did, but not so many since the war. I asked if he knew anyone who kept bees in order that I could visit and possibly buy a hive from them. He did not know anyone personally, but the Korean barber of our unit lived in a village where there was a family who kept bees. The village was over 50 miles away. I had official business in the general area, so I persuaded the barber and houseboy to accompany me on my trip. We would stop on our way by the village and see the bees and hives.

Upon arrival at the village I was astonished to see three freshly-painted, white, modern, single-story hives. I donned my mosquito net "bee veil" and army gloves while the Korean beekeeper, bare from the waist up, opened a hive of Italian bees. Inside were six frames with foundation drawn comb. I asked through my interpreter if they were willing to sell this hive. There was quite a long conversation carried on between my houseboy and the beekeeper. I finally broke in and asked what was being said. The reply was that they didn't want to sell the hive to someone who didn't know anything about bees. I quickly began to relate all I could remember about beekeeping from a course I had in college on apiculture.

This impressed them and one hurried inside the hut and brought out a book written in Korean on beekeeping and showed it to me. They apparently had a question they wanted to ask me about something written in the book. I could not read nor speak Korean. My interpreter's vocabulary was limited to only the essential English words he needed for his job of washing laundry and was no help with the terminology of beekeeping. It was interesting to see, because of the backward surrounding of these people, a beekeeping publication showing a detailed diagram of the anatomy of the honeybee. They told me they bought the bees and the book in Seoul.

A price was agreed upon with two more frames and foundation added to the hive. The Korean men have a wooden apparatus they strap on their backs which enables them to carry enormous loads. The American G.I.'s called them "A" frames because of the construction. An old Korean Papa-San put on his "A" frame, loaded the hive on his back and we began our treck down the mountain to our truck.

My curiosity was not yet satisfied for I had not seen any black bees in the hives. I asked my barber and interpreter where I could find some black bees. We went to another village, after the formal greetings and respects were made, we stepped inside the home boundary. Beside the house was another modern hive with a neat rock pile around it. A dark race of bees were bringing in their pollen to the hive which was painted with olive drab army paint.

A clean cut, first lieutenant in the

ROK Army stepped out of the house and spoke to me in very good English. He told me these bees were the native bee, which in his opinion produced the best-tasting honey. "The word 'bee' ", he explained, "in Korean is 'bul' ". The word meaning "from the West" is "yang". Therefore, the native bees is called "bul" and the Italian bee is called "yang bul". He said the main honey flow is in the spring when the chestnut trees are in blossom. I did see several buckwheat fields in bloom also.

He took me to a third village and showed the old way to raise bees. The hive was a hollow log about three feet tall, with an inverted bowl for a top. At the base of the log was the entrance and above it were three split holes for ventilation. The bowl top is lifted off and the comb cut out when the flow is over.

My new lieutenant friend was home on leave and asked if he might ride with me to Seoul. He brought out a large gunny sack of charcoal which he planned to sell at the market. The wages paid in the Korean army are not like that of our army. With one hive of "yang bul", a sack of charcoal, a Korean lieutenant, a barber, and a houseboy interpreter, my driver and I started the long trip back over the dusty, "wash board" roads which are so typical of Korea. Upon arrival at my unit, I had a hive of angry bees, which, to use the teenage jargon, were "all shook up".

I let them settle down for a day and then donning my G.I. beekeeping outfit, proceeded to open the hive. The first mistake of the coming series was to use wool gloves. Within seconds there were a dozen bees attacking my hands. I slammed the cover down and ran for the tent, followed by a formation of oriental yang buls. As I ducked under the tent flap, one bee veered off and hit our mongrel dog, who was sleeping in the shade, squarely on the nose. Ole Lady gave a yelp of pain and ran for the other side of the compound.

During the trip over the rough roads, my foundation sheets were torn in several places. An all-out search was made for some paraffin or wax to patch them up. The search ended in the dental clinic. The dentist said one of the constituents of dental wax used in false teeth dentures is beeswax. The next day found my clerk and me at work around the tent stove, melting pink dental wax. He was using the wax to repair his "choppers" while I attempted to repair my foundation. I had very little success. The dental wax would not fuse with the beeswax. It just cooled on top and broke off.

Several days later I noticed the bees falling from the hive, flying straight up out of sight and other unusual acrobatic gyrations. Investigation proved that prior to my arrival, insecticide cans had been stock piled at the present location of my bee hive. The fumes from the leaking cans were still impregnated in the soil and was poisoning the bees. Changing the location seemed to correct this condition.

The frost had now killed the remaining nectar sources and the native bees began to rob out my hive. I was amazed at the hardiness of this smaller bee. There would be several trying to get in at 7:30 on a cold cloudy morning. The Italians made no effort to venture out until around 10 o'clock. I began to feed the hive in order to build up a food supply for the winter. I first used jam from the mess hall, then sirup from canned peaches and finally sugar water. I placed the feeder inside the hive. The next day the feeder would be empty but no sirup was in the combs. I couldn't account for this in anyway since robbing had stopped. Several days later, however, when the sun was in the South and a mountain blocked out the blue sky below it, the mystery of the disappearing sirup was solved. I could watch the bees leave the hive and follow their flight by the sun shining through their wings. They were taking the sirup from the feeder, carrying it from the hive and dumping it in mid-air over the country side. I watched this activity many times. I could see the bee leave the hive, watch the droplets of sirup, fall and then watch the bee return to the hive for more.

They flew from the hive very slowly. When their pay load was relieved, they shot up very rapidly five to ten feet in altitude before they could compensate for the lighter wing load and then circled back to the hive. To this day I cannot positively account why a

(Continued on page 629)

XUM

Consider the *Extractor*

AYLMER J. JONES, Malden, Mass.

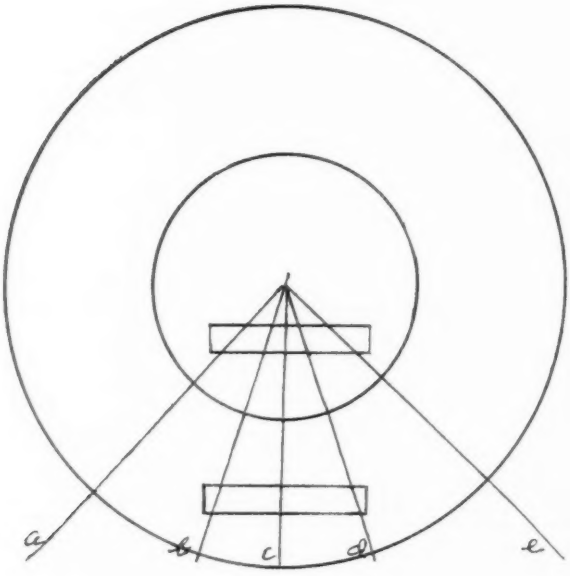
NOWADAYS WE take the extractor for granted and describe it as a "thing that whirls the honey out of comb". Little does the average beekeeper realize the research and trial and error that has gone into the manufacture of the present day extractor, nor does he appreciate the laws of physics which govern the efficiency of an extractor. Some of the older books on beekeeping discuss natural laws relating to centrifugal force and their practical application to extractors of the non-radial type (radial extractors being a fairly recent invention). For the smaller beekeeper, consideration of some of these buried facts may be of assistance in understanding the proper operation of the extractor he has, or may be of assistance to him in selecting one of proper size.

Let us consider first a law of centrifugal force: Centrifugal force with the same number of revolutions in a given time, varies as the distance from the center. This simply means that the faster a mass revolves, the more pressure there is exerted at a given radius; and/or the greater the radius the more pressure there is exerted at a given r.p.m.* Sounds simple, but think further. Centrifugal force is pressure exerted outwardly from a center along radii, as for instance force flowing outward like spokes in a wheel. Now let us draw a diagram as does Cheshire in "Beekeeping, Vol. II", published about the turn of the century. This diagram superimposes a large diameter extractor on a small diameter extractor and shows the lines of centrifugal force.

* Revolutions per minute.

Note that in the smaller diameter extractor, the thrust on much of the comb is sideways against cell walls, whereas the thrust in larger diameter can is more nearly outwards on the comb. In the larger can, not only is the thrust outwards, but the centrifugal force is greater at a given revolutions-per-minute speed. With this longer radius the perimeter is traveling further and thus faster at the same r.p.m. This is the same principle as a large wheel covering more ground than a small wheel at the same r.p.m. Now, of course, the difference in thrust can be compensated by varying the r.p.m.—specifically increasing it in the case of the smaller reel. However, by doing this, the pressure on the sides of the cells is increased enormously, and while the honey will be extracted, the danger of breakage is increased out of proportion as opposed to a large reel. This kind of breakage is not caused chiefly, as many suppose, by **outward** thrust on comb, but by **side** thrust along lines **a** and **e** against the sides of the comb cells.

Weight, too, increases centrifugal force as in a fly wheel, and has its effect, but most of us are familiar with the practice of partially extracting one side of a comb, reversing the combs, extracting completely, and then reversing again to complete the first side. This is to overcome outward pressure and breakage from weight against the basket, of which more later. Most of us soon come to appreciate another important factor; having combs of equal weight oppose each other in the reel so the extractor will not jump about. In this connection it is interesting to note



in passing a law of dynamics. A revolving mass seeks an axis that is its center of gravity. With a constantly changing center of gravity, the extractor jumps to keep up with the changing center. Improper loading imparts an eccentric center of gravity and is particularly noticeable at high speeds.

In all the talk about direct effect of centrifugal force on the honey and cells in the comb, let us not forget that high speeds and/or long radii do exert comb pressure on the basket. If the basket is not made of rigid construction, it will bend outward like a concave saucer and it is because of this phenomenon that the comb breaks outwardly in the center — as opposed to the sideways tearing away of top and bottom of comb from the middle that results from side pressure of honey being thrown against the cell sides in a short radius machine. In other words there are two forces causing comb breakage — side thrust of honey against cell walls, and outward thrust of comb against basket material.

One more factor to consider is the centrifugal effect on air within the extractor. A cylinder revolving with and outside of the reel causes the air in the reel to revolve, thus reducing the cooling effect caused by a current of air striking the face of the combs.

In the case of radial extractors these problems do not arise as combs are parallel to the radii and are extracted both sides at once. That is not to say there are no problems inherent in the radial principle. It requires a large volume to warrant purchase of a radial. For the small volume producer, a small capacity extractor (not necessarily small diameter) is perfectly efficient, but breakage can be avoided or at least understood if the above principles are clear. It should be clear that four shallow frames in four baskets will have less side thrust than four shallow frames in two baskets. According to Cheshire no radius of a shallow frame extractor reel should be less than six inches or about 14 inches in overall diameter of the can, and for Langstroth frames, the minimum is 7¼ inches or 16½ inches overall diameter.

Centrifugal force equals the square of the velocity divided by the radius distance $= V2 \div r$ (The factor of mass is omitted because our mass—comb and honey—is constant.)

The energy required is in the ratio of squares of the velocities. If two sys-

(Continued on page 629)

XUM

Editorials

A Honey of a Week

REFERRING to the calendar put out by the American Honey Institute each year, it is noted that **National Honey Week** this year begins October 28 and ends November 2.

This might be called the sweetest week of the year. Obviously, the purpose is to concentrate on publicizing and selling honey during that week, which comes at a time of the year when "the frost is on the pumpkin" in the North and people naturally think of honey to put on waffles, pan cakes, and hot biscuits.

Those who have honey to sell should take advantage of the printed matter put out by the American Honey Institute, Madison 3, Wisconsin, at a very nominal cost. Honey recipes, cook books, leaflets, and attractive counter cards for those who wish to prepare window displays during Honey Week are all available. Anything that can be done to increase honey sales will benefit our industry. Let's cooperate with the American Honey Institute in trying to raise the per capita consumption of honey to a higher level. Let's give the Institute our moral and financial support.

Roadside Spraying Bad for Beekeepers

THERE HAS recently been some seemingly indiscriminate spraying of roadsides to remove weeds and brush. In some instances it has been reported that sprays have drifted into nearby fields and caused some damage to vegetation.

Obviously, the spraying of roadsides does remove bee pasture, such as clovers, goldenrod, and asters, so badly needed by beekeepers these days. Some of the so-called weeds are valuable pollen plants. Bees need pollen as well as nectar.

We are for beautifying the roadside, if possible, but we are of the opinion that some clovers and other nectar plants which are not permitted to grow too close to the cement or road proper, are more pleasing to look at than roadsides that are denuded of all vegetation.

It stands to reason that there should be no vegetation at intersections of roads that would make it impossible for motorists to observe oncoming cars.

At the present time, when good bee pasture is much less plentiful than it was some years ago, the honey plants ordinarily found along highways that are not sprayed, are welcomed by beekeepers.

It would seem that state and county beekeepers' associations could well have as one of their objectives, this matter of bringing to the attention of highway supervisors, the indiscriminate spraying of the roadsides, which, in the opinion of beekeepers is uncalled for. Possibly beekeepers do not understand both sides of this question, but if we don't, we would like to learn more about the other side.

Tax Refund on Farm Gas

ON APRIL 2, 1956, a law was enacted entitling farmers to claim refunds for Federal excise tax on gasoline used on a farm for farming purposes. This law will have a very limited and probably not too significant application to the commercial beekeeper. It could, however, be of great importance to those beekeepers who also carry on a farming operation.

This tax refund applies to the owner, tenant, or operator who buys gasoline for use on a farm. It is also possible to claim a refund on gasoline used on a farm by a custom operator who performs services for you in such duties as raising bees.

According to the limited information available it is not possible to claim a tax refund on gasoline used by beekeepers for rental pollination on farms which the beekeeper does not own, rent, or operate.

In order to obtain a refund, gasoline must be used for "farm purposes" (such farm purposes include the raising of bees, the harvesting of honey, the maintenance of apiaries, and many other duties which would be more accurately classified as agricultural operations). Among the uses not included in "farm purposes" are farm uses involving public highways, personal uses, and extracting honey.

All people who expect to claim refunds on gasoline used for farming purposes should, of course, keep careful records of such items as the dates of gasoline purchases and the number of gallons purchased.

If you feel this law applies to you, contact your County Agricultural Agent or District Director of Internal Revenue for an Internal Revenue Service Form 2240 on which your claim is made. Questions on this subject could be answered best by writing your District Director of Internal Revenue for more detailed information.

Southern States Beekeeping Federation

THIS ORGANIZATION was started in January 1928 in Texarkana, Arkansas and has met each year since, the purpose being to discuss beekeeping problems and compare experiences. Meetings have been held all over the South during the past 29 years.

The coming meeting to be held in Winchester, Virginia, October 2 to 4, 1957, promises to be one of the best ever. An unusual array of talented speakers are to appear on the program at the George Washington Hotel. We will see you at Winchester.

Harmful Insects On the March

IT USED TO BE SAID that there were approximately 650 thousand kinds of insects in the world. At a national pollination conference held in Tucson, Arizona, in 1950, one of the speakers, an entomologist, said there were at that time over one million kinds of insects on earth and many have not yet been classified.

During a recent bee meeting we saw a movie which showed very graphically billions of locusts in Africa marching through the country consuming enormous amounts of vegetation. Pictures were taken from a plane from which clouds of locusts could be seen in the distance. In fact, as the plane contacted the clouds, it was almost impossible for the windshield wipers to remove the carcasses of the locusts from the windshield. Planes were used to spread poisons in the path of the invading locusts.

In this country, where harmful insects are increasing each year and various kinds of sprays are being used, beekeepers have been concerned, and rightly so, concerning the possible poisoning of bees. DDT, when used properly to control gypsy moth, bark beetles, and other insects attacking forest or shade trees, according to best authorities, is not a serious threat to honeybees. It is recommended, however, that such spraying not be done while fruit trees are in bloom.

The application of insecticides to agricultural crops can and apparently do cause some losses of honeybees. However, entomologists are constantly on the job giving out information on the proper use of such sprays and advise a caution against spraying crops of fruits, clovers, and alfalfa when in bloom, as a protection to honeybees.

Harmful insects appear to be on the increase, so it seems essential to use proper control measures to keep them in check. Otherwise we might eventually be over run with them.

However, we should do all possible to protect honeybees and other useful insects that are so essential for pollinating farm crops. One way to accomplish this is for leaders in our industry to continue to keep in close touch with manufacturers of insecticides and those who do the spraying, to make them more conscious of the value of honeybees to agriculture.

XUM

NEWS REEL

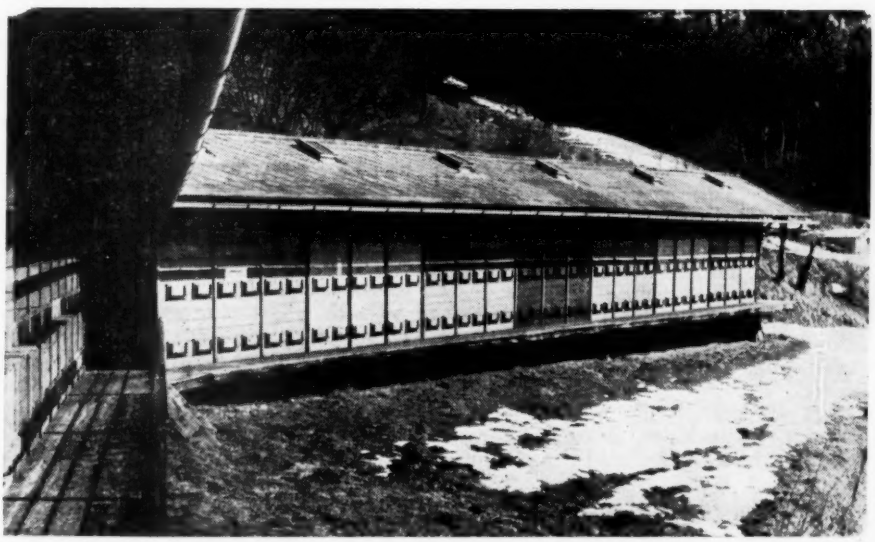
W. J. NOLAN, who recently retired as USDA apiculturist at the Beltsville Research Cen'er, takes a look at a colony of overwintered bees ready for more pollen in their diet. —Photo by Forsythe, USDA Department of Agriculture.

SCHOLARSHIP checks of $10.00 were awarded to two 4-H club members attending the annual beekeeping short course August 12 to 16 at the Pennsylvania State University. Twelve year old Arthur Tomascheck of Vera Cruz, Pa., foreground, receives a check from A. R. Dean of Pittsburgh, secretary of the Pennsylvania S'ate Beekeepers' Association. Holding check at right is David Slusser of Littlestown. At left is Edwin J. Anderson, professor of apiculture in charge of the training. Behind young Tomaschek is W. W. Clarke, Extension bee specialist at Penn State. The Lehigh Valley Beekeepers' Association also awarded Tomaschek $10.00 for expenses.

D & Z LIBRARY

SCHENECTADY, NEW YORK, JUNE 28.—A queen bee chose this 50 horsepower motor as a new home for her colony of more than 20,00 thus delaying the shipping plans for General Electric's Small A-C Motor and Genera'or Department. The bees were finally rerouted to a new residence through the efforts of employee George Strait (above), an amateur apiarist, who took the motor apart and removed the queen. Ironically, the motor is to be shipped to a Cincinnati tool builder as the power source for a machine destined for, of all places, General Electric's main Schenectady plant. Not one person was stung during the three-hour hunt for the queen.—Photo by Authenticated News, New York.

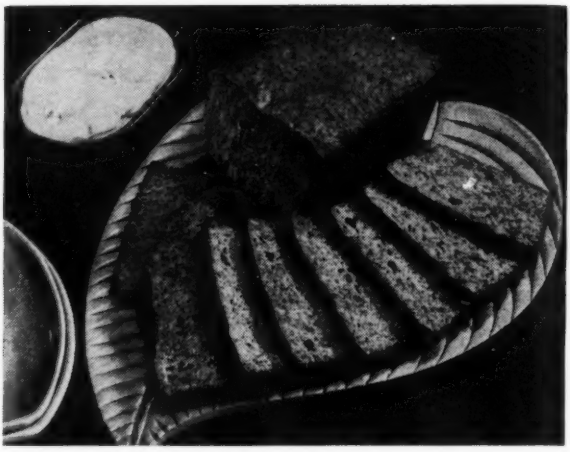
BEEHOUSE of a commercial beekeeper in Corinthia, (origin land of the Carniolan bee). The beekeeper's name is Neunteufel (in English, nine devils).



XUM

Be Prepared

MRS. BENJ. NIELSEN
Aurora, Nebraska



Honey breads spread with flavorsome cheese spread makes a toothsome quick treat.—Photo courtesy Kellogg Company.

ARE YOU one of those homemakers who can always whip up passable lunches when unexpected callers drop in? No? Well, you will more nearly qualify for that achievement if you make a practice of keeping on hand one, or better yet, a variety of honey-quick breads. Date, black walnut, orange, brown—all are grand keepers. Thinly sliced and buttered or spread with one of the flavorsome cheese spreads, they make luscious accompaniment for piping hot honey sweetened coffee or tea, or a simple salad.

Wrapped in aluminum foil and packed in the freezer these delightfully flavored, easy-to-make confections will keep indefinitely and actually improve in flavor. It is no trick at all to thaw and use them when an emergency comes along.

Just a word of caution; do not overmix when adding dry ingredients and use a moderately hot oven in baking.

Black Walnut Honey Bread

Two cups sifted flour, 4 teaspoons baking powder, 1 teaspoon salt, 1 cup chopped black walnuts (English may be used if preferred) 1¾ cups whole bran cereal, ½ cup honey, 1 egg, 1⅓ cups milk, and ⅓ cup shortening, melted.

Sift together flour, baking powder and salt. Mix with nutmeats and cereal. Combine honey, egg, well beaten, milk and cooled, melted shortening. Add to sifted dry ingredients, stirring only until combined. Spread in greased 9½ x 5¼-inch loaf pan. Bake in moderate oven, 375 degrees F. about 1 hour. Yield: 1 loaf.

Honey Brown Bread

One-half cup honey, ½ cup sugar, 2 cups buttermilk, 1 egg, well beaten, 1 cup white flour, 2 cups wheat graham flour, 2 teaspoons soda, 1 teaspoon salt, and 1 cup raisins, cooked.

Combine honey, sugar, buttermilk and well beaten egg. Mix thoroughly. Add to dry ingredients which have been sifted together, stirring only enough to combine. Add raisins. Place in well-greased loaf pans. Bake in moderate oven, 375 degrees F. about 45 to 50 minutes. Yield: 2 loaves.

Honey Orange Bread

Two tablespoons shortening, 1 cup honey, 1 egg, beaten, 1½ tablespoons grated orange rind, 2⅔ cups sifted flour, 2½ teaspoons baking powder, ½ teaspoon soda, ½ teaspoon salt, ¾ cup orange juice and ¾ cup chopped nut meats, optional.

Cream shortening and honey together thoroughly. Add egg and orange rind. Sift flour with baking powder, soda and salt. Add to creamed mixture alternately with orange juice. Add nuts. Spoon into greased loaf pan. Bake in moderately slow oven, 325 degrees F. for about 1 hour and 10 minutes. Yield: 1 loaf.

FROM Foreign LANDS

Translated and Edited by ERIKA BARTH

Bumble Bees as Pests

THE SHORT-TONGUED humble (bumble) bee may be regarded as a pest of red clover in New Zealand because of its perforating habit.

Now that the short-tongued species is already in New Zealand, little can be gained by increasing the number of honeybees in red clover crops as a large percentage of these use the perforations made by the short-tongued species. However, before or after perforation the flowers may also be tripped by those bees that disregard the perforation.

On the other hand, the report continues, the potential value of the honeybee for the pollination of red clover was demonstrated in the exceptionally dry season of 1955. The crops flowered early before the appearance of the short-tongued humble or bumble bee workers and were quite well pollinated by the honeybee alone.

It may be concluded, reports E. C. Wratt, scientist, who made the above observations, from the small number of pollinating bees and the resulting small yields of red clover seed obtained from plains areas, that the introduction of humble or bumble bee species beneficial to the setting of seed is still incomplete.

The New Zealand Beekeeper. May 1957. Pg. 32.

Sweet Tomato Sauce

SOME FOLKS like their sauce hot but here is a New Zealand recipe that calls for it sweet:

Eight pounds tomatoes, **two pounds honey,** one pound large onions, two tablespoons salt, one teaspoon ground cloves, and one teaspoon of cayenne pepper. Cover with vinegar and boil for three hours. Should not ferment.

The New Zealand Beekeeper. May 1957.

What Good is Your Association to You?

JOHN H. WHITE tackles an interesting subject and comes up with some ideas of what a bee association should do for members. Some slight changes have been made to comform with our setup in this country. Here is the plan:

Service Provided	How Provided	By Whom Provided
Scientific and Practical Information	Publications Lectures and Demonstrations	Members Bee Press Extension Men
Practice	Lectures and Demonstrations Work in local Demonstration Apiaries	Members Extension Men
Disease Control a) When Suspected	Examination of Material Suspected of Being Infected	Bee Inspectors Qualified Members
b) When Confirmed	Destruction of Diseased Colony Disease Insurance	Bee Inspectors Qualified Members Extension Men
The Opportunity to See and Study the Work of Others	Honey Shows	County and State Assoc.

British Bee Journal. Feb. 16, 1957.

Live and Learn

by Propolis Pete

IN RESPONSE to an overwhelming demand (I got a letter) asking for information about my celebrated half pack for winter, I am devoting this page to a description of it, in the hope that it may help you.

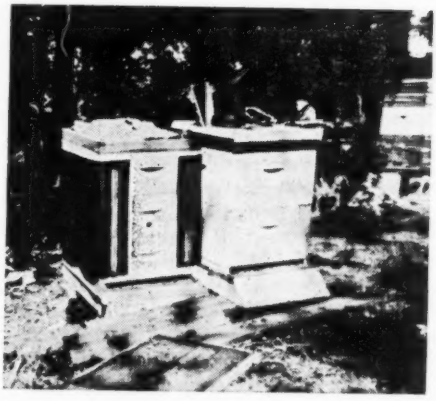
Really, I am going to kill a whole flock of birds with this one stone, because, not only will I tell you about the details of this pack, but also I will show my famous deep dry sugar feeder, and my super de luxe model three-quarter-depth hive. If you are interested, gather round, children, and listen to Papa:

Some pictures are printed herewith. I am not proud of them, but they are the best I can do with a borrowed camera. I have a roll of color film with 15 pictures still to be taken in my regular camera, but they can't make photo cuts from color slides, so these will have to do. Fig. 1 shows how the regular two-story hive compares with the hive made up of three, three-quarter-depth supers. The bees seem to like the three decker all right. The working space within varies only a little from the standard two-story hive. The extra space for sideways traffic helps the bees move across in winter, and seems also to help ventilation in the summer. These bees didn't even build queen cups this past spring, so it might be a help to hold down swarming. Also, these supers are fairly easy to handle, that is, in comparison to the heavy deep supers. Furthermore, when extracting, they hold quite a lot more than the regular shallows, but they are just as easy to uncap.

Fig. 2 shows the wrapping in place. On the top body I put a deep tray that I use for dry sugar feeding, until I run out of deep trays.

Then I use a regular inner cover. The deep trays are first put on the colonies that I suspect may run out of stores before nectar is coming in in quantity next spring. This saves a lot of agony later on if I find that somebody needs help. In this tray, or on top of a regular inner cover, I fold old scrap burlap bags that I get for nothing at the packing houses and farm auction blocks. Two or three generally will do the trick. There is no formula or speci-

No. 1.



No. 2.

No. 3.

fication. I just put on what I think will be a thick enough pad. Some bags are thinner than others, so some colonies get three and some get four or even five. Then the regular outer cover goes on top of the pile, and a cement block or heavy stone holds down the lid. When I run out of rocks, I tie the cover on with two or three strands of binder twine. This is somewhat of a nuisance; the rocks are much better.

That's all there is to it. I don't think it took me more than ten minutes to do this whole job, including cutting the paper and taking the pictures. When I do my packing this way for the whole yard I don't think that it takes more than an hour and a half for the 23 colonies that I have at home. The paper can be cut in advance, and the twine also, if necessary. The paper doesn't have to be cut every year. It lasts for quite a while. Use rocks if you can. They are a lot faster, and are not much of a storage problem in the summer. Just pile them up somewhere out of the way. They will keep without attention, and the weather and termites don't bother them.

To cut the paper, get ordinary heavy roofing paper, which comes 36 inches wide. Cut it in half to 18 inches, and then cut to 66 inch lengths. You can do it backwards too, that is, cut the full width and then slit it in half. I generally have the slats that hold the paper in place ready, with the nails half way through. Then, while holding the slat with one hand, just a tap of the hammer seats the slats.

Some of you may say that with such a little bit of packing you may just as well not wrap at all. Maybe so. I often wonder about that myself. Sometimes I wonder if they would not be just as well off with just the top packing under the cover. But last year, packed like this, my colonies all came through perfectly, and half a dozen beekeepers around here who did nothing to give the bees protection, had a lot of winter loss. Why?

RECOMMENDATIONS FOR BETTER BEEKEEPING

W. A. STEPHEN, Extension Beekeeper, Raleigh, N. C.

"BEES, TO BE profitable, must be housed in movable frame hives and receive intelligent care".

1. Keep your bees in movable-frame hives and keep the frames movable. House clean at least once a year, preferably in early spring.
2. Use full sheets of wired foundation and wire the frames. Be sure to embed the wires well.
3. Use two hive-bodies for brood chambers during the build-up period. Reduce to one hive body by using queen excluder once the honey flow starts.
4. Reverse hive bodies (brood chambers) or adjust combs during build up so that open or soon-to-be open combs are on top.
5. Have brood combs drawn during a good honey flow.
6. Use uniform equipment. The Langstroth hive is considered standard.
7. Have three to five shallow supers for the storage of surplus honey.
8. Add first supers at beginning of honey flow, or when tops of brood chamber combs show white wax.
9. Clip queen's wing, the left on the odd year, the right on the even year. It will help you tell her age and will not let her fly away in case of swarming.
10. Requeen whenever old queens become maimed or when queen shows signs of failing—certainly by the time she is two years old.
11. Unite small swarms onto weaker colonies.
12. Leave a brood chamber full, or at least a super full of honey on each hive for winter stores. Don't rob too closely in spring, either.
13. Feed a 2:1 sugar syrup as a substitute when honey is in short supply.
14. From mid-winter to early spring feed a pollen substitute when pollen is needed, but is not in the combs, or when the weather or season is unfavorable for the bees to collect pollen from early sources.
15. When problems arise that you can't answer, consult your county agent or write the Extension Beekeeper.

Let's Talk about Honey Plants

DR. HARVEY B. LOVELL
Louisville, Ky.

Oregon holly-grape (Mahonia Aquifolium Berben's Aquifolium)

WILD BERGAMOT (**Monarda fistulosa**). Mr. Gilbert Perigo, chief inspector for Indiana, has recently sent me a sample of honey made from this plant which has a heavy body, a very fine flavor, and a medium amber color with a reddish tinge. He writes "During the period from mid-July to August 10, bees worked wild bergamot heavier than any other bloom and at all hours of the day from 8:00 A.M. to 6:00 P. M. I made a number of observations in the following counties: Whitley, Noble, Steuben, DeKalb, and Allen. I have checked only one apiary to determine the result of this flow. Strong colonies have produced 50 to 60 pounds surplus of bergamot honey. One colony had produced two supers from foundation which had been drawn out and completed from this source. The sample mailed you should be pure bergamot since it was taken directly from a comb and not run through an extractor."

By an interesting coincidence, Jack Deyell sent me a sample of wild bergamot from Medina, Ohio, at almost exactly the same time with the comment, "Yesterday while walking near one of my beeyards, I found bees working on a honey plant, as per sample enclosed, with which I am not familiar. It has been in this area for a number of years and appears to be increasing."

Wild bergamot has lavender flowers and a very long tube, over two cm. in length and is usually considered to be a bumblebee flower. It is a close relative of bee-balm, a bright red flower usually visited by hummingbirds as well as bumblebees, and horsemint with spotted yellow flowers which produces many tons of honey in Texas and adjacent states. Horsemint honey has a very strong minty taste and odor, but the sample from Indiana from bergamot does not. How the honeybee can reach the nectar of wild bergamot in such a deep tube is a mystery to me. However, I found honeybees working it freely in northern Kentucky last summer in a dry upland pasture.

North Carolina. In a recent letter W. A. Stephen, extension beekeeper, wrote that "Bees have been working Oregon Holly-grape (**Mahonia Aquifolium**) from mid-February on. Beekeepers should be encouraged to plant these attractive evergreen shrubs." Holly-grape is a popular shrub around Louisville, Kentucky, and is worked freely by bees as it blooms in early spring and undoubtedly gives a lift during early brood rearing. It grows wild in the Rocky Mountain states. I saw great mats of it or a related species on the slopes of mountain ranges in Utah recently. Mr. Stephen also "found bees working **Silphium compositum** in North Carolina. The bees were certainly working it vigorously and there is no doubt that it should have a place in your list of honey plants. I appreciate having your manual as reference." Several species of the genus **Silphium** are listed as honey plants including the compass

(Continued on page 636)

POOR FELLOWS, YOU PROFESSIONALS!

H. G. WATKINS, Mill Valley, Calif.

My second strongest colony on January 11, 1955.

I DON'T ENVY you the lack of time to **play around** with the bees. Being just a back-lot hobbyist I can do all kinds of things that would be unthinkable to you.

This last September after removing 120 pounds of honey from my strongest hive, I REDUCED it to four brood chambers and left it for winter.

Winter in this part of California consists of an average rainfall of 54 inches and rarely, temperatures as low as 25 degrees F.

Now it is the last of January and the four-story hive has two chambers **full** of brood, from wall to wall, top bar to bottom bar, and is bringing in so much eucalyptus and California bay nectar that I've added a fifth deep chamber.

Admittedly the manipulation is awkward and no doubt I'll replace the queen introduced in the fall. She has earned retirement to the observation hive and no doubt about it. But, being in this just for the joy of it and not trying to earn my bread with the bees, these are small considerations indeed.

The thrill of hearing the contented hum-m-m of the hive, fairly reeking in self satisfaction at such munificent stores; the joy experienced watching the bees hurrying about their tasks in mid-winter, so intent that even rain will not slow the flow of the supply line; the perfume of ripening nectar lying heavily on the air, making my nose hungry for spring—all these are satisfying to me.

I'm glad that I'm just a hobbyist! I find time nearly every day to contemplate this world of wonder in my back yard. Can you, Mr. Professional?

XUM

A Talk to Beekeepers

M. J. Deyell

With Special Reference to Beginners' Problems

Jack Deyell beside the Gleanings scale hive which he visits every morning. This is how it looked at the close of the 1955 honey flow. It gave a surplus of 160 pounds.

The Scale Hive

FOR SOME years we have kept a scale hive, just west of the Gleanings' office. It tells us what the bees are doing. The scale hive colony did practically nothing during June and July. It gained seven pounds in June and lost two pounds in July. Wet cool weather prevailed during most of July. During August the colony gained 16 pounds and during September thus far, September 12th, it gained 25 pounds.

I have been interested in determining the amount of weight the hive loses between 8:30 in the evening and 7:30 the following morning. Yesterday was a good honey day and when I examined the scale, about 8:30 in the evening after all of the bees were in, it showed 174 pounds, a gain of 11 pounds during the day. However, this morning at 7:30, the weight was 171 pounds, a loss of three pounds during the night or a net gain of eight pounds during 24 hours. The weather was somewhat cool this morning so that no bees had left the hive when I was examining it.

This matter of how and when the bees expel the excess moisture from the nectar in order to reduce it down to the consistency of honey, is an interesting study. Since nectar is said to be approximately 66 per cent water the amount of moisture depending on the source, also weather conditions, it is probable that the bees will continue to expel some moisture for a time. In fact, three days ago the scale hive had made a gain of nine pounds. The weather the following day was cool with a drizzling rain. I looked at the scale that afternoon and the hive had lost two more pounds.

It seems to me that beekeepers, especially the commercial class, should have a scale hive which will serve as a barometer of what bees are doing in storing surplus honey. In this locality we never know until about October 15 or 20 what the crop will be. Last year most of the small amount of surplus honey we secured was stored from October 1 to 16, from late aster. This year the bees are storing honey from goldenrod.

I Visit My Old "Stomping" Ground

During the past few years I have had an invitation to appear on the program

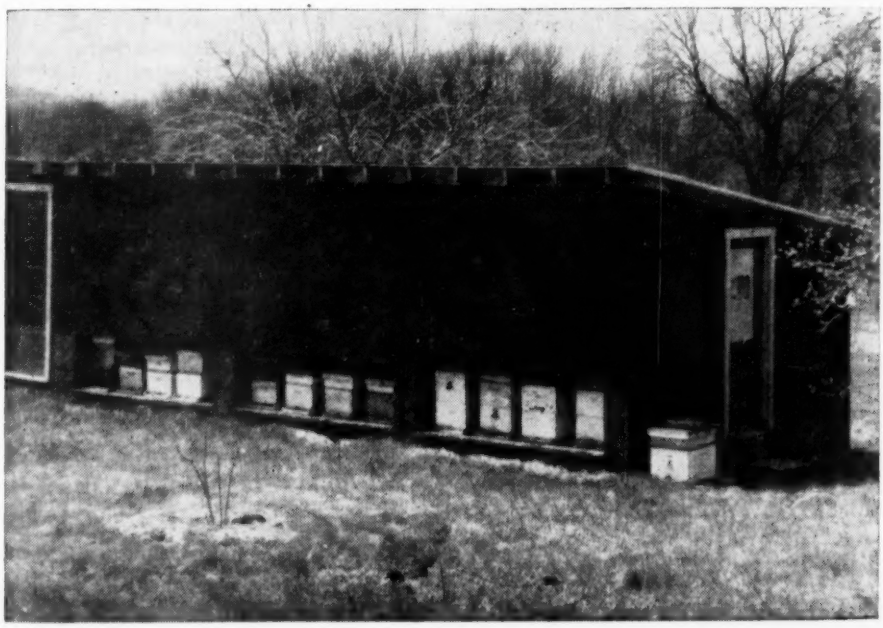
of the Northwestern Michigan Beekeepers' Association meeting in Copemish, Michigan, where I kept bees during 1917 and 1918. Not until this year have I found it possible to accept the invitation. I flew from Cleveland to Traverse City where Clarence Freeman of Mesick, Michigan, met me. It was beautiful flying weather and I had a chance to view the beautiful state of Michigan from south to north. The fields of corn, grain, and small wooded areas resembled a checkerboard.

Mr. Freeman drove me through the Traverse Bay area where cherries are grown in abundance. After calling on a few local beekeepers, we drove to Floyd Hatch's home near Copemish where I spent the night. The Hatch's live about three miles from where I used to keep bees, so that evening Mr. Hatch drove me over to see the old place. Naturally, there have been a number of changes in the appearance of the farm and surroundings that have occurred during the years. As we drove down the long lane leading to the place where we lived, also the apiary site, I experienced a strange feeling away down inside of me which is impossible to describe. The house where we lived had burned down. As I viewed the cellar or basement to the house where I wintered over 200 colonies of bees, the winter of 1917 and 1918, and as I walked over the ground in the orchard where the bees were kept, I recalled many fond memories of days of yore which are beyond recall. I seem to have an over-amount of sentiment in my makeup. Some people seem to be devoid of sentiment.

The next day during the Copemish meeting, held in the Town Hall, I had the opportunity of meeting many beekeepers of the younger generation. I did meet one old time beekeeper, Chan Freeman of Copemish who has kept bees in that area since 1901. During the early days he produced comb honey by the carload and still has some bees, although he is not as actively engaged in beekeeping as he once was.

Mr. Freeman asked me if I remembered the time he called at our home at 11 'clock at night and found my wife and me putting full sheets of foundation into frames and stacking the frames into hive bodies piled up on the floor of our living room. I told him that I

Beehives under the honey house of John Rick, in Berks Co., Pa., near West Reading.—Photo by Paul Hadley, Temple, Pa.



did recall that occasion. The story of my Michigan experiences appeared in Gleanings a few years ago, so I will not repeat them at this time, except to say that during the first season we had to work until midnight for a time to keep ahead of the bees. The man from whom we bought the bees was a comb-honey producer. We were working for extracted honey so it was necessary to assemble hive bodies and frames equipped with foundation and this was quite a task since the honey flow began rather suddenly before we were ready for it. The flow from raspberry was very heavy and it continued for almost a month. The bees worked from early morning until late evening.

The Copemish meeting was a real success, with around 100 in attendance. Beekeepers in that area are securing a good crop and they feel very much encouraged.

At the time of the meeting, August 11, the summer honey flow was tapering off. However, there was an abundance of goldenrod in waste places and prospects appeared to be favorable for a fall flow.

I have observed that goldenrod in the North comes into bloom before goldenrod further south. I am told that goldenrod honey in the North is lighter in co'or than goldenrod honey further south. Just why this is, if true, I do not know.

I Visit My Old Home

Almost every fall, the last week in August I make a trip during part of my vacation to see my sisters and brother living in Victoria County, Ontario, in the vicinity of Lindsay and Peterborough.

I understand from my brother Huber Burke and brother-in-law Elmer Skuce, both of Omemee, Ontario, that the honey crop in that section of the Province was quite good this past season. The flavor or quality of the honey is excellent and the color light. I have always been partial to Ontario honey, perhaps because I was brought up on it. My earliest recollection of honey was digging white granulated honey out of a tin can in mid-winter. It was a mixture of alsike clover and basswood. I can still taste it. When I used to visit my grandfather, one of the first beekeepers in that area, my grandmother would serve delicious white honey in a green dessert dish and until this day I always imagine honey tastes better served in a green dish.

As a rule, beekeepers in Victoria County do not get any surplus honey after September 1st. However, the bees do occasionally make better than a living after that date. When I was there a considerable amount of red clover, alfalfa, and early goldenrod was in bloom. My brother's scale hive did gain a few pounds on days that were warm enough for bees to work. While at my brother-in-law's I watched bees come in from the field on a rather cool day and they appeared to be loaded with nectar as they landed on the alighting board some little distance from the entrance, then walked in slowly. I observed some bees on goldenrod. About five years ago during my visit there, my brother-in-'aw's bees stored some surplus from goldenrod the latter part of August. However, this is the exception rather than the rule.

To Winter or Not to Winter Bees

During recent years the two subjects that received attention at bee meetings were swarm control and wintering. During the time comb honey was being produced in quantity, swarming was a major problem. At present, however, in the production of extracted honey most beekeepers have learned to control swarming by having young queens to head colonies, also to provide ample comb space which means putting on supers in advance of colony needs.

However, the wintering problem especially in the North is still with us. Some beekeepers in Canada and the Northern tier of states kill off their colonies of bees in the fall, using Cyanogas, leaving some combs of honey and pollen in the brood chamber for starting new colonies from package bees the following spring. This practice has some advantages as well as disadvantages. When packages with queens are installed the following spring, all have an equal chance of building up to uniform strength, provided of course the queens are of good quality and the packages are installed early enough in

the season to develop into populous colonies at the beginning of the major honey flow.

Beekeepers who follow this method do not have to worry about wintering, but they do have to worry about getting the bees delivered at the right time the following spring. Occasionally weather conditions in the South may not permit shipping on schedule time. Of course, the carrying charges of bees are rather high, however, those who practice killing off bees in the fall and starting with packages in the spring seem satisfied with this method.

Those who winter bees have to worry about their having enough stores and ample protection. There is bound to be some winter loss due to failure of queens late in the fall and possibly inadequate protection against the elements. However, beekeepers in the far North are finding that they can winter bees out of doors with a minimum of loss, provided the winter stores are of good quality and the colonies consist mainly of young bees. (See article in September 1957 Gleanings entitled "Wintering Bees in Northern Saskatchewan," by J. E. Hastings, Birch Hills, Saskatchewan.)

I am reminded of a visit I had with the late Mr. Le Maistre of Edmonton, Alberta, Canada in July 1953. He told about a beekeeper who had a vicious hive of bees and decided to get rid of them, so late in the fall he carried the hive to a wind-swept area beside a lake and pried up one corner of the hive cover. He thought that would end the life of the colony, but to his amazement when he visited the hive the following spring, the colony was still alive and apparently in fighting condition. This simply illustrates the fact that bees will endure low temperatures especially if they have plenty of good food where they can get to it and can get an occasional winter flight.

In giving this example of how the colony lived through the winter, we do not wish to imply that ample protection for bees is valueless. It has its place in good wintering. According to experiments we conducted at Medina during four winters, it was found that packed colonies consumed less stores than colonies in single-walled hives that had no packing.

Mr. and Mrs. Floyd Hatch of Copemish, Mich.

However, if colonies are populous in young bees, and have an abundance of stores properly spaced above the winter cluster, such colonies are likely to winter, even though they may not have as much winter protection as some beekeepers provide.

It would appear that a middle or top entrance for each colony has some value in that it helps the bees to expel any excessive moisture that may accumulate in the hives during the cold winter months.

A Word to Beginner Beekeepers

Beginners who are just starting in beekeeping will perhaps be concerned about wintering their bees, especially about the amount of honey there should be in each hive and protection in the way of packing material around a single-walled hive. We have been recommending the food chamber hive, which is a two-story hive, the upper story being well filled with honey, in addition to some honey in the lower chamber. This type of hive helps to insure an abundance of winter stores, also an ample amount of food for the early spring months. A colony going into

(Continued on page 637)

Beekeepers emerging from Conference Hall: Gadget display on left, new equipment display on right.

Eastern Apicultural Society Meeting

JOHN BUCHANAN, Sales Mgr., The A. I. Root Co.

THE THIRD annual meeting of the Eastern Apicultural Society held on the campus of the Pennsylvania State University, August 23 and 24 proved even more conclusively than before the fact that this relatively new Society is a well-founded one, and that it is increasing in popularity. Following the precedent set by previous meetings at the University of Maryland and the University of Rhode Island, the Pennsylvania meeting was an excellent blend of genial social life, light entertainment, and the teaching of sound beekeeping knowledge.

Accommodations were most excellent, the delegates being housed in Simmons Hall, one of the new dormitories within easy walking distance from the Conference Hall and the cafeteria. In one of the spacious lounges of Simmons Hall a delightful Tea Party for the ladies was held on Friday afternoon, the hostesses being Mrs. E. J. Anderson, Mrs. W. W. Clarke, Mrs. William G. Singer, Mrs. A. R. Dean, and Mrs. Elmer Reustle. Miss Hazel Henderson, harpist-beekeeper from Cleveland, Ohio, furnished delightful entertainment. Previous to the tea the ladies enjoyed a conducted tour of the University Flower Gardens.

The meeting itself was very well attended, featuring leaders from surrounding states, as well as Canada. While there were many speakers there were no duplications of subject matter, yet all talks were relative to beekeeping.

Following the Invocation and greetings by College authorities, Mr. James I. Hambleton of Beltsville, Maryland, gave the keynote address to start out the meeting on Saturday morning. This

was followed by an address by Dr. Gordon F. Townsend, of the Ontario Agricultural College, at Guelph, Ontario, Canada. Presentation of the Pennsylvania Honey Queen, 1956-1957, Miss Patty Werts of Greensburg, Pennsylvania, was then made. A progress report on recent honey research was given by Dr. J. W. White, of the U. S. Department of Agriculture, Regional Laboratory, at Philadelphia.

In the afternoon Dr. Marvin Webster of the U. S. Department of Agriculture, spoke on "The Honey Co-operative in Relation to the Small Beekeeper" after which W. W. Clarke, Extension Apiarist for Pennsylvania, talked on "The Use of Drugs in Pennsylvania Beekeeping", and Porter Evans, beekeeper of Norristown, New Jersey, addressed the group.

The remainder of the day was consumed in visiting the University Bee Laboratory, and in the evening there was square dancing in the Union Building.

At the breakfast on Saturday morning special tables were reserved for bee inspector groups, teachers of beekeeping, bee supply representatives, and honey packers. Chairmen of these groups reported later in the day on their findings.

On Saturday the speakers were Mrs. Fern Hetrick, of Camp Hill, Pennsylvania, who talked on "Honey in the Home". Mr. H. R. Swisher of Ohio, representing American Beekeeping Federation, reported on progress in his group, and invited members to the forthcoming annual meeting of the Federation in Columbus, Ohio, to be held in January.

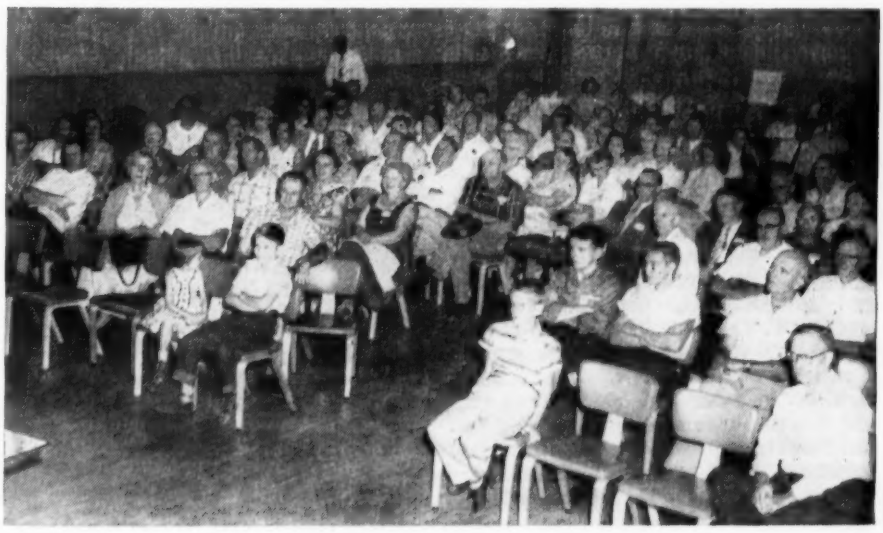
On Saturday afternoon Dr. E. J. Anderson of Pennsylvania State University, spoke on "Principles of Candy Making", and Dr. H. A. Borthwick, U. S. Department of Agriculture, Beltsville, Maryland, on "Photo-periodicity in Plants". Mr. Roy Grout, Associate Editor of American Bee Journal, gave an illustrated account of the International Bee Congress in Vienna.

A chicken barbecue was held on Saturday evening, in Horticulture Woods. It was well attended and enjoyed by all.

At the final session on Saturday evening Dr. Burton of the Pennsylvania Department of Education, was a special speaker, giving a very humorous and instructive talk.

Dr. George Abrams is to be commended for his work in connection with the Honey Show which was inaugurated this year. This show was very successful, and it is hoped that it will grow to

Delegates of all ages were very regular in attendance at all sessions of the conference.



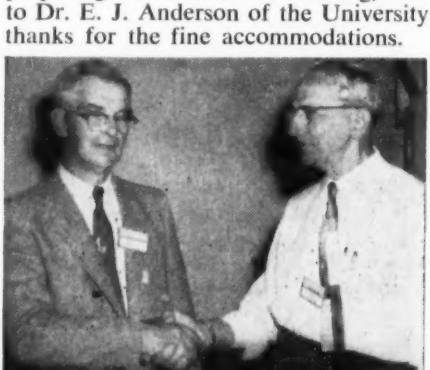
Former honey queens join in crowning Pennsylvania's 1958 honey queen, Elizabeth Sweigart of Terre Hill. Left to right: Darlene Becker of Schafferstown, 1956 queen; Miss Sweigart; reigning queen Patty O. Werts of Greensburg; and Lorraine Eshleman of Annville, 1955 queen. Crowning took place during the Eastern Apicultural Society's annual meeting August 24 at Pennsylvania State University. The 1958 queen assumes her role next January. Honey exihbit in background was prepared by W. Ralph Gamber of Lancaster, Pa.

larger proportions at subsequent meetings. There were a number of gadgets shown, and these were under the direction of Max Miller of Hublersburg. In addition to displays by the Dadant and Root Companies there was an excellent honey display in the Convention Hall through the courtesy of Ralph Gamber of Lancaster, Pennsylvania.

At the close of the meeting the 1958 Honey Queen of Pennsylvania, Miss Elizabeth Sweigart of Fairhill, was crowned, after which the business meeting of the Society was held. Elected President for the year 1958 to succeed A. R. Dean of Pennsylvania, was George T. More of Barre, Massachusetts. Vice President will be Alfred Baptiste of Concord, Massachusetts, and Maxine Manchester, of Middlebury, Massachusetts, will continue as Secretary.

Next year's meeting will be held at the University of Massachusetts.

The 400 persons attending are grateful to our host, Pennsylvania State University, for providing the excellent facilities. Our past president, Art Dean, deserves credit for a lot of hard work preparing this successful meeting, and to Dr. E. J. Anderson of the University thanks for the fine accommodations.



A. R. Dean, past president, and George T. More, newly elected president.

Asked & Answered

When Should Combs be Extracted?

Q. You have stated in Gleanings several times, that the combs must be ¾ capped before they are ready to extract. But what do you do to make the bees cap the combs so I can extract them. The whole super feels as heavy as the super with the capped combs. Will the bees cap unfinished comb or eat it up first?

A. It is a little difficult to set up any hard and fast rules concerning combs of honey that are ready to be extracted. When the weather is real dry, it is not difficult for bees to expel excess moisture from nectar. However, when wet, cool weather prevails, it is very difficult, sometimes impossible, for the bees to drive off excess moisture from nectar in order to reduce it down to the consistency of honey. This means that during dry, hot weather it may not be necessary for combs of honey to be ¾ capped over. On the other hand, during continuous wet weather, combs of honey that are ¾ capped over may not be suitable for extracting. So you see, much depends on weather conditions that prevail during the time the honey is to be extracted. It is thought that the reason bees do not cap all combs completely is that they need some honey for food, especially during a dearth of nectar and it is much easier for the bees to take the honey from open cells, than it would be to uncap the cells in order to get the honey. One way to determine whether or not combs of honey should be taken from hives to be extracted is to hold a comb flatwise, then shake it to see if any of the thin honey comes from the cells. If the honey is thick enough to remain in the cells when the comb is shaken with the cells facing down, it is all right to extract the honey. However, if the thin honey comes out of the cells after being shaken, the super of honey should be left on a while longer until the bees cure it properly.

Odor from Hives in the Fall

Q. There is a peculiar odor from my hives every fall beginning from September 10 to September 25 and lasting two or three weeks. What causes it?

A. The odor is no doubt from the evaporation of nectar gathered from goldenrod or fall flowers. In many localities the odor coming from the hives during the process of ripening nectar from fall flowers or goldenrod is quite strong. By noting what the bees are working on you may be able to determine which plant is furnishing this nectar. As a rule, after the nectar has ripened this odor disappears and the honey is not necessarily strong in flavor.

Insufficient Stores Left After Extracting

Q. If a colony fills three extracting supers and I take them all off, will it be necessary to feed this colony sugar syrup for winter?

A. If there is no later honey flow to supply stores for winter, it will be necessary either to feed such colonies for winter or to give them a food chamber of honey. Often it is not safe to extract all the honey from the supers even when a later honey flow is assured, for there may not be enough honey left in the brood chamber to enable the colonies to keep up brood rearing until the later flow begins.

Estimating the Population of a Hive

Q. I have often seen references to a hive containing a certain population of bees (say 30,000 or 40,000). Is there any accepted method of estimating the population of a hive? How do the writers who give such figures arrive at them? Is there any formula whereby one can calculate the estimated population by counting the number of frames of sealed brood or the number of bees entering and leaving the hive?

A. It used to be said that there were approximately 5000 bees in a pound. During recent years it has been found that there are between 3500 and 4000 bees in a pound. We do not know exactly how this figure was arrived at, but it seems likely the bees in the swarm or hive were counted after they were killed with Cyanogas. During the years the writer has helped to shake bees from combs into packages that were shipped to customers. After having some experience along this line it is not difficult to estimate rather accurately the number of pounds of bees in a swarm clustered on the branch of a tree. It would seem however, that there is considerable speculation concerning the estimated population of hives of bees.

The PRICE of the Housewifes' DOLLAR

HARRIETT M. GRACE
Director of American Honey Institue
Madison 3, Wisconsin

IMAGINE A GROCERY BILL that totals $65,000,000,000! Beyond imagination, you say. Beyond anyone's comprehension. Why, that would be enough groceries to feed hundreds of millions of people.

And that is exactly it. For the American people spend annually about $65 billion on their weekly trips to the grocery store. That figure is ample reflection of the abundant prosperity enjoyed in this country today. Every indication points to a continual rise in this total, as the country becomes more prosperous and the standard of living goes up.

Now, how much is Honey able to slice off this $65 billion that satisfies the American appetite? Can we in the Honey industry keep Americans demanding Honey in a lusty voice, or will the demand dwindle to a mere whisper?

The answer to this moot question lies in the answer to this one: Will those in the Honey industry sharpen up market-wise, or will they let the market slip into the fingers of a stronger contender?

Shakespeare put it simply: "To be or not to be". For in this competitive food world the weak sisters get trampled under foot while the stronger, more aggressive products surge on to ready success. There is no room for the weakling, the pussyfooter, the Mr. Milquetoast.

This does not mean that we lurch into the marketing business with fists flying, and a pugnacious look on our faces. Far from it. You can't horsewhip an American into spending his money. But you can urge him to spend it. And you can do this by (1) learning your market, (2) learning your product, (3) learning proven principles of advertising and methods of promotion, and (4) applying what you have learned.

Know Your Market

Take the first point: (1) Learn your market.

In a restricted sense, this can be done only by each individual seller of Honey who knows which specific locale his Honey will reach. But in a broader sense, we can remember this: The bulk of this tremendous 65 billion dollars is spent by the nation's women, and more specifically, by those women between the ages of 18 to 35 years of age. We can cut it even finer than that—most of the women are mothers with families to feed.

These bare facts are important guide lines to the man who wants to expand his market. When he makes up his label, he uses colors that attract women. He remembers what Helen McCully, food editor of McCalls, says about labelling for women: "The assumption that the user knows nothing about cooking is necessary at all times. The only way to have a satisfied customer is to make sure that she reads and follows a recipe. It has been our experience that when an error has been committed in a recipe, the error was caused by the consumer 99 per cent of the time. Since no woman blames herself when something goes wrong, she will say that the directions were poor or ingredients inferior." And she urges use of specific, detailed instructions on every label.

The beekeeper must point out the economy of the purchase of Honey.

He must stress his Honey as a food that is good for growing children.

He remembers that Ma is the cook in most families and helps her out with tested recipes that cannot fail.

He packs his Honey in all sizes of containers to accommodate the big as well as the small family.

He appeals to the woman's instinct

for a bargain by using premiums and one cent sale ideas.

He even remembers to inform the new mother that Honey is recommended by doctors for use in the infant formula.

Beekeepers who analyze their markets must also keep broad market trends in mind. Food purchases step up during holidays; therefore, use of Honey for holiday foods must be released at just the right moment. The new importance of diet places a strain on Honey sales if the housewife regards it merely as a sweet. The beekeeper counteracts this by boosting it as an energy food that is quickly digested. The trend toward ready-to-eat foods can be exploited by the beekeeper who points out that Honey can be eaten right out of the jar.

These are only examples. There are many more.

Know Your Product

Point 2 is every bit as important as Point 1—learn your **product.**

This sounds silly. Of course every beekeeper knows his product. His bees make it, don't they? Who knows it better than he does?

There's an old saying about being too close to the forest to see the trees. Perhaps we're too close to the product to know its faults.

So to be sure we know Honey as the potential buyer knows it, let's look at Honey through the buyer's discriminating eyes.

Someone says, "It's sticky." Yes, it is. No matter how often it is denied or how it is camouflaged, Honey is sticky. Smart beekeepers acknowledge this fact and they take **great** care to keep the stickiness inside the jar and not let the Honey container be anything less than spic and span.

Another one says—"It's a sweet. It has calories. Lots of them." But even the diet-conscious public knows that some calories must be in every menu, and Honey provides a p'easant-tasting sweet that is more easy to digest than any other.

Another says—"The Honey industry is small." It has a tough time competing with its more sizable neighbors who have bigger advertising budgets and more fancy promotion programs to tinker with. But smallness need not mean weakness. Quantity need not outweigh quality. Our industry need not back up to anyone if we keep our quality high, our selling alert.

Size has nothing whatsoever to do with the profits of an organization. A small organization can realize handsome profits if it is efficient and if it is vital.

General Foods leans heavily on this concept of "re-vitalizing" an industry. It is done, they say, by "adding new and profitable products, improving the old, and pruning the obsolete."

There is something to think about.

Producers Scattered. What of it?

Someone may say—Honey producers are scattered all over the U.S. It is hard to weld such a scattered group into a compounded whole. But it is being done—by the American Honey Institute. This organization gives substance to the flimsy whole, adds mortar to the entire structure of the Honey industry. Organized only on a national basis, it makes an important nation-wide industry out of an otherwise localized one.

H. S. FOSTER RETIRES

H. S. Foster state apiary inspector of Florida, is retiring from the State Plant Board of Florida this fall. Mr. Foster was born near Spring Hill, Tenn., and graduated from High School and Cumberland University. He later worked with the dean of queen rearing, John M. Davis, Spring Hill, Tenn., and later engaged in honey production in Alabama and Tennessee. He began his apiary inspection work in 1939 and in 1947 succeeded Robert E. Foster as Chief Apiary Inspector. Mr. Foster, who has reached retirement age, is to be commended for the splendid work he has done for beekeeping in Florida. Mr. Russell Martin has been appointed to the position of Chief Apiary inspector of the State Plant Board. Mr. Martin has been with the State Plant Board for ten years and is well qualified for the position.

OBSERVATIONS OF AN AMATEUR
Borrowed Bees

C. D. CANNON, Warren, Pa.

SEVERAL YEARS AGO, word came to me through the farmer where I kept my bees that another farmer wanted to see me. Several weeks later I called on him and found that he had some bees, but had not had time to look after them for several years. He wanted me to take care of them; he to get honey for his own use only. The only condition was that they must remain on his farm. Since I keep bees as a hobby, I had nothing to lose but my time and gasoline driving out to the farm. My son agreed to help, so we took them on.

There was equipment enough for five colonies, but only three had live bees. It all needed cleaning and paint, and the empty hives had everything from wax moths to toads in them. Skunks had been working on the live colonies. Occupied hives were four stories high and full. They had not been opened, or honey removed for three or four years. It was obvious that we had a big job ahead.

First, we selected a location away from his buildings and made a platform of two by fours one foot high to get up away from the skunks. We borrowed the farmer's truck and after busting a few buttons got those heavy hives up on it and moved them to the new location. The clean up and paint up that followed was too tedious and tough to recount, but we ended it about the first of September with three good colonies and a new colony with a self-reared queen, and lots of honey. We put a full-depth super with foundation only, on the strongest colony and they filled it beautifully with aster honey. The bees were rather light Italians, and were not too mean after they got over the clean-up operation.

We noticed, when cleaning up, that some of the hive bodies and frames had been scorched, but there was no disease and the farmer said there had been none during several years he had cared for them. We found different later.

Next summer we made the fifth colony by dividing and secured a good crop of honey.

Early in that summer (1954) I discovered disease in one colony. It appeared to be sacbrood and responded to terramycin. When the Inspector arrived a careful examination showed both sacbrood and A.F.B. Before fall they were all clean, but two were weak and as the go'denrod died down, they were robbed out. The other three were heavy with honey and went into winter in good condition.

Late in the winter, on a warm day, I examined them and found two frozen out and the third about done, all with plenty of honey. The bees had been unable to move to it during the previous cold weather.

We cleaned things up again, saving out 20 of the best frames of comb and honey, determined to keep things going. Late in March we received two three-pound packages of bees and installed them.

They really started off fast, but in spite of dusting with sulfathiazole A.F.B. soon showed. Dusting continued, and happily dandelions bloomed late. The bees used up all the honey in the combs and we fed them on dark honey, medicated with sulfathiazole. The disease cleared up quickly and by mid-May they were crowded in their one-story hives. (We kept them in town, in our yard for close observation.)

Because of previous experience with robbery, I did not want to move them to the farm until a good honey flow was on, and I did not want to add extra bodies before moving. Three frames of bees and brood were taken from each one and a third colony was established. Frames from different hives were placed on opposite sides of the new one, and four frames with foundation were put between them. There was no fighting and a queen was promptly reared.

In spite of a clipped queen, one of the colonies managed to swarm in August, but we hived it.

To sum it up for 1955 we bought two packages and finished the season

(Continued on page 636)

I UNVEILED A MONUMENT TO LANGSTROTH

H. H. ROOT, Medina, Ohio

A FEW YEARS AGO, a beautiful monument in honor of L. L. Langstroth was to be dedicated in Greenfield, Massachusetts. This was appropriately located on the lawn of a church adjoining the property of what had once been a girls' school of which Langstroth was the head.

Dr. E. J. Dyce had written me, requesting that I make the dedicatory speech and unveil the monument. I protested at first but understanding they wanted me because I was the only person available who could remember Langstroth, I consented.

Mrs. Root and I drove, taking two of our grandchildren. I had a sore throat when we started but thought the trip would benefit me. We turned into the parking lot at the church just as my part of the program was to begin. I hurriedly put on my coat and walked over to the monument in time to hear Dr. Dyce's introduction. "Your committee selected Mr. Root of Ohio not because of his long acquaintance with Mr. Langstroth,—not because he is nationally known,—but because he has the only voice in the beekeeping world that can make people hear out-of-doors!"

Now unknown to me, what turned out to be tonsilitis had progressed to such a point that my voice was gone. I couldn't speak above a whisper but since Mrs. Root and the children, for a couple of hours had done all the talking, I was unaware of that fact. I stepped up before hundreds and started my prepared tribute. When my lips moved and no sound came forth, Mrs. Root, on the front row, scowled, evidently thinking I was indulging in some practical joke. Dr. E. F. Phillips beside her looked astonished. Mrs. Phillips' face was a study. I cleared my throat and started all over but my loud speaker was not working. I whispered my way along for ten minutes. Not even Dr. Dyce, sitting two feet away, heard me. In great confusion and disgrace I retired, forgetting to unveil the monument. They had to pull me back to finish what I had come hundreds of miles to do.

That night I had to speak at a dinner and the next morning I was on the program at Amherst. Few heard me at the dinner. By morning, I could make everyone on the front row understand. A loud speaker is not much good if it isn't working.

MY FAILURE IN BEEKEEPING

(Continued from page 605)

starving colony would carry food away from the hive. I thought it might be the chlorination processing of our drinking water, but I got the same results when I used fresh river water in the sugar solution. The only possible explanation I can give is that the poisoning from the previous weeks had in some way affected the remaining bees. The queen had stopped laying and no new bees had been produced since then.

In one last effort to save my ill-fated colony, I went to Seoul with another Korean lieutenant to buy some honey for them. We found a shop which had a picture of a bee on a sign out in front. The inquiry was made and the store keeper presented us with a quart jar of dark brown, sugared substance which he said was honey. After paying an outrageous price I returned to my hive with the aspiration of saving my colony's life. When we melted this honey, (if it was honey) we found it was highly adulterated. Nevertheless, I poured it in the empty combs and waited until February before I opened the hive again. The colony had either winter killed or starved.

This ended my failure of beekeeping in Korea. In my failure I had found humorous moments, a pleasant pastime, a chance to make interesting observations, experiments with my bees, and finally was able to do some unofficial public relations work with beekeepers in Korea.

Just News

The first indoor meeting of the **Middlesex County Beekeepers' Association (Mass.)** will take place on Saturday, October 26, at the Waltham Field Station. A roast beef dinner with all the fixings will be served the members by "Hicks, The Caterer". A review of the summer activities is being planned.

Middlesex County is particularly pleased that two of our members were elected officers of the Eastern Apicultural Society at the meeting of the EAS held in Pennsylvania in August. Mr. George More of Barre, Mass. will be President of the EAS for the forthcoming year, and he will be assisted by Mr. A. J. Baptiste of Concord, Mass. as Vice President. The annual meeting of the EAS will be held at Amherst, Mass. in 1918. Congratulations to Mr. More and Mr. Baptiste.—L. C. Proctor, Corres. Sec.

The **Midwestern Beekeepers' Association** will meet at the I.O.O.F Hall, 812 Westport Road, Kansas City, Mo., Sunday, October 13, 1957, at 2:30 P.M. The subjects for discussion will be fall extracting and winter preparations. Refreshments served after the meeting.—J. F. Maher, Sec.

The **Westchester County Beekeepers' Association** will hold its first indoor meeting at the Odd Fellows Hall, 20 Lockwood Avenue, New Rochelle, N. Y., on Sunday, October 20, at 2:30 p.m. Plans will be discussed in regard to the "Honey Contest" which will take place at the November meeting. Topic of discussion will be "Wintering your Hives." Now that vacation is over, let's make this meeting a good turnout. Visitors are also welcome. Refreshments will be served by the "Queen Bees".—Mrs. Alfred Roth, Pub.

The next indoor meeting of the **Norfolk County Beekeepers' Association** will be held Sunday, October 6, 1957 at 2 p.m. at the Norfolk County Agricultural School, Walpole, Mass. The nomination of offices will be made at this meeting and an interesting film will be shown. All come and join us at this important meeting.—Edith L. Colpitts, Corres. Sec'y.

The 37th Annual Meeting of the **Florida State Beekeepers' Association** will be held in Tallahassee, Florida, on October 10-11. Headquarters for the meeting will be at the Duval Hotel. We cordially invite all interested beekeepers from surrounding states to attend this meeting as we feel that the program will be of interest to all. I urge all those planning on attending to make their hotel reservations as soon as possible, since that is a football week-end and rooms will be in great demand.—F. A. Robinson, Sec'y.-Treas.

The **Texas Beekeepers' Association** will hold its annual meeting, November 11 and 12 at College Station. Further details will appear in the next issue.

The annual meeting of the **Iowa Beekeeper's Association** will be held at Ames, Nov. 1 and 2. Every beekeeper is invited to attend these sessions.—F. B. Paddock, Sec.

The annual meeting of the **Georgia State Beekeepers' Association** will be held October 7 and 8 in Waycross at the National Guard Armory, located on Garlington Ave., just off the Waycross and Tifton Highway. An interesting program is planned which includes outstanding speakers from different parts of the country, a tour to the Great Okefenokee State Park and a banquet the evening of the 7th. Good hotel and motel accommodations are available. For details write Waycross Chamber of Commerce.—Warren Wilbanks, Sec'y.

The **Ohio Women's Auxiliary** was formed at the summer meeting of the Ohio Beekeepers' Association held July 27 and 28. With 19 women present as charter members, the following were elected to office: Chairman, Mrs. Helen

Long, Box 158, St. Paris, Ohio; Co-Chairman, Mrs. Cora Dunham, 224 W. Kenworth Rd., Columbus, Ohio; Corresponding Secretary, Mrs. Lillian Bailey, 770 Olen Drive, Worthington, Ohio; Secretary-Treasurer, Mrs. Ernest D. Gilbert, 2188 N. High St., Apt. 23, Columbus, Ohio; Membership Chairman, Mrs. H. R. Swisher, 1733 Sunset Ave., Springfield, Ohio.

It was decided by vote that the dues will be $1.00 a year. To you, the women of Ohio, we extend an invitation to become members of the Women's Auxiliary of the Beekeepers of Ohio. You may send your dues to Mrs. Ernest D. Gilbert, 2188 N. High St., Apt. 23, Columbus, Ohio.

Our first responsibility will be as hostesses for the National Meeting of Beekeepers and their wives to be held Jan. 28 through Jan. 31, 1958 at the Neil House, Columbus, Ohio. We hope you will make plans to attend and help us extend a welcome to the beekeepers' wives from all the other states.—Mrs. Lillian Bailey, Cor. Sec.

The next **International Beekeeping Congress** is to be held in Rome, Italy, during September 1958. Plans are already under way for the meeting, including arrangements with travel bureaus for excursions from many countries.

THE NATIONAL Honey Show, sponsored by the American Beekeeping Federation, will be held February 4-8, 1958, at the Florida State Fair at Tampa, Florida. This is the largest mid-winter fair in the United States and has had an outstanding display of Florida honey for many years. The display space being made available is over 70 feet long and will need a lot of honey to fill it.

The people attending the Fair are from all parts of the U.S.A. and Canada who are wintering or vacationing in Florida at the time. They will be interested in seeing how honey from their part of the country compares with other honeys.

The contest rules will be essentially the same as in past years, as will be the various entry classifications. There are six different honey classes open based on color, grade, plus one for section comb honey, one for chunk honey in 2½ pound jars, and three for honey cookery. There are cash premiums on each of these types of entry from one through fifth place. Most entries will be 12 one-pound jars, and one person may enter as many different classifications as he desires.

Fairs and shows of this type are one of the best ways of promoting honey, so save some of your best honey to enter this show. More complete rules and information will appear later and can be obtained from Fred Oren, 2516 Silver Lane, Tampa, Fla.—Millard V. Coggshall, Minneola, Florida.

1957 Southern Convention

FAMED WINCHESTER is the place, apple capitol of the East... October 2, 3, 4, are the dates, with headquarters at George Washington Hotel (make your reservations!)... The apple harvest will be on... Side attractions: the fascinating valley caverns, the breath-taking Sky-Line Drive, the great Valley of Virginia, flanked by the Alleghanies on the West, the Blue Ridge on the East, steeped in historical interest, with Harpers Ferry and Gettysburg nearby. The nations' capitol an hour away. (Plan also to see Williamsburg and Jamestown while in Virginia.)

Come to the most important Beekeepers' Meeting in the area in many years, hear a program loaded with interest and value for all beemen....Reports indicate people are coming from all of the 13 states that make up the Southern Conference, and a heavy attendance is in prospect from states North and West of Virginia.

Take a careful look at the program. You'll be officially welcomed by the son of the Great Virginia Statesman, and worlds' largest apple grower, Senator Harry F. Byrd, Jr. Dr. Hambleton, of U.S.D.A., Beltsville, will spell out the irrefutable argument why bees must stay and prosper—the need for pollination. Harvey York, Jr., and his panel will bring the latest on package bees (Harvey operates 10,000 colonies in Georgia). The editors of both the bee journals will be here. George Cale, Editor of the American Bee Journal, with

a picked team, will offer the best on installation of package bees. (He has installed over 15,000 packages himself.) Jack Deyell, Editor of Gleanings, will do an expert stunt on the Amateurs Special, ably flanked by W. W. Clarke, Jr., of Penn State, and Leslie Little of Tennessee. (Vo-Ag. student groups from area High Schools will be invited to attend.)

Eminently capable Mrs. Grace, Director of American Honey Institute, will grace the program and offer the latest "know-how" on honey values. The latest on Royal Jelly, which is having some publicity at present, will come from Mr. Willson of New York City (the worlds' biggest honey salesman). The poison menace will be appraised: from the national level by Maxwell (Chairman of the Spray Problem Committee, ABF); fungicide poisoning by Amos, V. P. I.; and County Agent Harner of West Virginia will deal with alfalfa spray problem (he may have the answer). And don't miss the banquet! (with the inimitable Mr. Clay as Toast Master).

S. Joaquin Watkins, the live-wire President of the American Beekeeping Federation, Inc., will be on hand. (If you haven't joined ABF., you must. . .). Mr. Haynie will bring us the Florida Story . . . Mississippi's expert queen breeder and hybrid queen specialist, Dr. Cale, Jr., will discuss the hybrid subject (with, maybe, some heckling from the audience).

Come and bring your family.

Your Hosts,
The Virginia State Beekeepers' Asso.
C. L. Burgess, Jr., President

Allen Latham, Norwichtown, Conn., died September 3 at the age of 88. Early in his boyhood he became interested in apiculture and was an active beekeeper for over 65 years. His preparatory education was at Lancaster, Mass., high school and he graduated from Harvard College in 1892. For a number of years he taught in high schools and the Norwich Academy before devoting his full time to beekeeping. He contributed many articles to Gleanings in Bee Culture and the American Bee Journal while engaged in commercial queen rearing and honey production.

Mr. Latham wrote a book entitled "Allen Latham's Bee Book". He was also accorded a life membership in the Connecticut Beekeepers' Association of which he was president for nine years. He is survived by a sister, eleven grandchildren and five great grandchildren.

Congratulations, Dr. Morse

DR. ROGER A. MORSE, recently an entomologist for the Waltham Field Station of Massachusetts, has been appointed Extension Apiarist at Cornell University for the State of New York. Among the Doctor's other distinguishing achievements is the excellent job he performed as Entomologist for the State Plant Board of Florida. He received his fine background for the work he is about to undertake, at Cornell University, working under Dr. E. J. Dyce. His studies there culminated in the receipt of his Ph.D. degree in Apiculture and Economic Entomology. We are all looking forward to Dr. Morse's future contributions to the world of beekeeping.

Dr. Roger A. Morse

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 18c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month, preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

IOWA honey, one can or truck loads. Russell D. Smalley, Beaver, Iowa.

CLOVER extracted honey in sixties. Abram Brubaker, Rt. 2, Lancaster, Pa.

MICHIGAN'S finest raspberry, basswood, clover comb honey, in 4 x 5 window cartoned cellophane wrapped sections. Extra fancy, $8.00; Fancy, $7.00; No. 1, $6.00; No. 2, $5.00 case. E. Z. Quick Way B Farms, Boyne Falls, Michigan.

FOR SALE—Pure tupelo and wild flower in 60's. Honey candy. En-R-G Foods, Inc., P. O. Box 232, Lancaster, Pa.

FOR SALE—Clover honey, 30,000 pounds. Wayne Keller, Oshkosh, Nebr.

FINEST BASSWOOD — CLOVER HONEY. New 60's. Fully ripened. You will be pleased. John McColl, Tecumseh, Michigan.

CLOVER HONEY — truck or carload, new 60's. E. L. Gamble, Adams, N. Y. Telephone 5-2577.

FOR SALE—2-pound fancy white tupelo and gallberry chunk comb. Write for volume prices. A. V. Dowling, Valdosta, Ga.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, Ohio.

CASH FOR BEESWAX. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

WANTED—White extracted or comb honey. Send sample. Millersport Honey Co., Millersport, Ohio.

BEST CASH DEAL for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

HONEY WANTED, all grades in 60's. Mail samples, advise quantity, best price. M. R. Cary Corp., 219 Washington Square, Syracuse 8, N. Y.

BEESWAX WANTED—Highest prices paid in cash or trade for bee supplies. The A. I. Root Company, Medina, Ohio; Council Bluffs, Iowa; San Antonio, Texas.

WRITE FOR SHIPPING TAGS and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. Walter T. Kelley Co., Clarkson, Ky.

WANTED: Light amber clover, fall flowers, buckwheat, and white clover. Send sample and lowest price. Cloverdale Honey Co., Fredonia, New York.

WANTED—Honey in 60 pound cans, also beeswax, any quantity. L. E. Allen, Tipton, Mich.

CASH for Amber and Buckwheat Honey. Best cash price for wax. Hubbard, Onsted, Michigan.

WANTED—Buckwheat and light amber honey. Eastern Food Products, 421 Bedford Ave., Brooklyn, N. Y.

WAX WORKERS render and buy beeswax, manufacture plain and WAVYWIRED foundation. Prices and shipping tags on request. WAX WORKERS, Ithaca, N. Y.

WANTED, chunk comb and extracted honey. Mail sample and price. Stoller Honey Farms, Latty, Ohio.

WANTED—All grades of extracted honey, car loads or less, cash. Cans exchanged if wanted. Have lots of emptys, 25c each. Honeymoon Products Co., 39 E. Henry St., River Rouge 18, Mich.

FOR SALE

WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation, Onsted, Michigan.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

FOR SALE—An old established package bee, queen bee, and honey outfit. This is a complete unit with everything necessary for immediate and continued operations, and only current supplies to be purchased. The unit consists of about 450 colonies, 2000 queen nuclei, complete modern honey plant in a concrete building; hundreds new and used supers, frames, and various other equipment. Truck, shop, necessary tools, bee locations, home, and property. One of the best bee package and about the best honey location in the State. Located in South Louisiana. An unusual opportunity for a hard working beekeeper. Your ambition is your limit. Ill health is reason for selling. Cash sale. SUNKIST BEE CO., Convent, La.

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
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Oconomowoc, Wisconsin

THREE-BAND ITALIANS
Quality and service guaranteed to please.
W. E. PLANT
HATTIESBURG, MISS.

ROYAL JELLY
$16.00 oz. with direction for mixing and taking.
JACKSON APIARIES
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QUEENS
Italians Only
Nice large queens, each 70c
For air mail, add 5c each.
Send us your order of 1 or 1000.
Producer of Royal Jelly.
MITCHELL'S APIARIES
BUNKIE, LA.

HOLLOPETER'S Italian Queens
June 1st - Dec. 1st, $1.00 Each
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BUILD your own FACTORY TYPE HIVES and SUPERS with SAMSON CORNER JOINTS. Only a bench saw and hand tools required. Our low cost Copyrighted BLUE PRINTS and INSTRUCTIONS cover everything and can save you many dollars. Write for information.
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HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

FOR SALE—New heart cypress 10-frame bottom boards. KD, 10 or more, $1.00 each; 50 or more, 90 cents each; 100 or more, 85 cents each. One nailed up sample postpaid, $1.25. Fred L. Poole, Elizabethtown, Rt. 2, Box 67, No. Car.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. Southwick Apiaries, Waban, Mass.

BEES AND QUEENS FOR SALE

WE use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

CARNIOLAN and CAUCASIAN Bees for 1957. Booking queens. Each, $1.00; 2-pound bees with queen, $4.00. 3-pound bees with queen, $5.00. Lewis & Tillery Bee Co., Rt. 3, Box 251, Greenville, Alabama.

IT PAYS TO REQUEEN. Old queens in your hives cost a lot through lost production. Young queens pay for themselves and give a good profit besides. One super of honey difference in favor of the young queen is not too much to expect in most any location. We can furnish the best select young Italian laying queens from now until Oct. at $1.00 each; 10, $9.00; 25, $20.00. Prompt shipment. No disease. Air Mail postpaid. H. C. Short, Fitzpatrick, Ala.

450 colonies bees. No disease. Extra equipment. Large fire-proof shop. Good clover locations. Wilburt A. Walker, Port Austin, Mich.

PRODUCTIVE ITALIAN QUEENS — $1.00 each. Ten up, 90 cents. Shirl Baker, Rodney, Mich.

400 colonies of bees and equipment, $45.00. Eugene Frasher, 122 Linden, Big Rapids, Mich.

FOR SALE—2500 hives of bees for April delivery. Located in Central California's alfalfa seed and cotton district. Write Gleanings, Box 87, Medina, Ohio.

FOR SALE—8 small apiaries, South and Southwest of Ithaca, N. Y. Also 40 good 2-colony winter cases, many good supplies. Ray Wilcox, Odessa, N. Y.

HELP WANTED

Experienced beekeeper for permanent position in Louisiana and Minnesota. HOPKINS HONEY FARMS, GREENBUSH, MINN.

SEEDS

HONEY PLANTS our specialty. Catalog on request. Pellett Gardens, Atlantic, Iowa.

WANTED

OPPORTUNITY to buy small honey-packing and bee-supply business. Preferably in East. Gleanings, Box 388, Medina, Ohio.

WANTED TO BUY OR RENT. Fully equipped beekeeping business and equipment free from foulbrood. Robert Otto, Hutchinson, Minn.

MISCELLANEOUS

FOR SALE—ROYAL JELLY and The Little Queen Royal Jelly Extractor. Royal Jelly Enterprises, 1017 Los Carneros Ave., Napa, Calif.

ROYAL JELLY. Nationally known "Api-Vitalex" brand hi-potency. Royal Jelly products. Capsules and Beauty creams. Wholesale distributors and agents sought everywhere; particularly among beekeepers. Large profits available. Write airmail for prices and literature. "Api-Vitalex" Dept. BG; Box 6674, Medical Center Station, Dallas 19, Tex.

CHEMICALS. Prevent moth damage on stored combs with paradichlorobenzene (PDB). Full directions on label. Five pounds delivered, $3.00. Quotations on larger amounts. Tritox Chemical Co., Washington, Ind.

ROYAL JELLY BEAUTY CREAM in ¾-oz. jar, $1.50 to beekeepers, retails for $3.00. 1-oz. jar, $2.00 to beekeepers, retails for $4.00. 2-zo. economy size, $3.50, retails for $7.00. Prairie View Honey Co., 12303 Twelfth St., Detroit 6, Mich.

INFORMATION on producing and preserving Royal Jelly commercially. We are the first to advertise Royal Jelly for sale in natural form, in leading bee journals throughout the U.S.A. I don't believe our record of production is surpassed anywhere. Information of our years of experience will be sent prepaid for only $4.75. O. K. Anderson & Son, Box 193, Coffee Springs, Ala. U.S.A.

MAGAZINES

Archiv fur Bienkunde, International journal for Bee Culture and beekeeping economics. Founded in the fall of 1918. Oldest economic bee journal in the world. Praised again and again for its decades of independent leadership through many endorsements and advice as a valuable source also for the practice. Classic. Yearly DM 5.50. Any aspiring beekeeping friend will receive a sample copy. Biene-Verglag, Gielback, Lindau, Germany.

Know interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh Dist. Naini Tal, U. P. India or available through them. Subs. Rs9/ or 15 shillings or $2.25 yearly. Sample copy post free for Rs ⅛, or s2/6, or 40 cents (International Money Order). Payment in mint postage stamps of your country accepted.

YOU'LL LIKE GOAT MILK! Profit and health with dairy goats. Sample monthly magazine and information FREE. Dairy Goat Journal, Dept. T., Columbia, Mo.

BEE WORLD, the international journal of the Bee Research Association published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $5.50 per annum, or $6.00 including membership of the Bee Research Association. Apicultural Abstracts only $4.50 per annum from the Hon. Subscription Secretary, Bee Research Association, 10 Barnett Wood Lane, ASHTEAD, Surrey, England.

Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3106, Cape Town, South Africa.

DO YOU FIND it difficult to secure information about sheep and sheep ranching methods? The SHEEP AND GOAT RAISER reaches more sheepmen with more information on range sheep than any other magazine published. Subscription $3.00. Box 189, San Angelo, Texas.

Italian Queens

EUGENE WALKER
Rt. 2, Box 207
Live Oak, California

THANK YOU:
For the Nice
PACKAGE BEE
Business you
gave us this spring.

We are proud of our ability to again ship your orders on time with practically no loss in delivery reported. Our queen yards produced the most satisfactory results ever, in spite of much cool and unfavorable weather.
Queens available through October.

Reg. Strain Island Hybrid

1-25	.90 ea.	$1.20 ea.
26-99	.80 ea.	1.10 ea.
100 up	.75 ea.	1.05 ea.

Queens clipped and/or marked on request only.

Rossman Apiaries

P.O. Box 133 Moultrie, Ga.

QUALITY BRED
ITALIAN QUEENS

Breeders selected from our Michigan Apiaries for high production and hardiness.

Queens .....$1.00 each
After May 20th ... .75 each

All queens shipped Air Mail. No more packages this season.

Walter D. Leverette Apiaries
P.O. BOX 364 FT. PIERCE, FLA.

THE AUSTRALASIAN BEEKEEPER

The senior beekeeping journal of the Southern Hemisphere provides a complete cover of all beekeeping topics in one of the world's largest honey producing countries. Published monthly by Pender Bros. Pty. Ltd. Box 20, P.O., Maitland, 3N, N.S.W., Australia. Subscription by Bank Draft or International M. O. 18/-(Approx. $2.15) per year, post free. Sample copy free on request.

Be Sure to Write Us if You Have Questions on Beekeeping that Bother You.

XUM

SUE BEE SAYS:

PLAN AHEAD

Everyone is busy now taking care of this year's honey crop. Do not neglect the fall work that will mean the diffference between a good crop and just a crop next year.

One of the most important items is the health of the colonies you will winter over. A small amount of Fumidil B fed this fall will pay big dividends next spring

We have a large, fresh stock of Fumadil B as well as Terramycin and Sulfathiazole. Check these prices. Your order in the mail today will insure prompt attention.

0.5 gm. Fumadil B.	$ 2.40
9.5 gm. Fumadil B.	28.50
1 lb. Sulfa Sodium or fine powder	4.50
10 lb. Sulfa Sodium or fine powder	38.25
1 lb. Terramycin T. M. 5	1.25
10 lb. Terramycin T. M. 5	10.00

SIOUX HONEY ASSO.

Sioux City, Ia. Lima, O. Waycross, Ga.
Anaheim, Calif. Rogers, Texas
Tacoma, Wash.

FLOWERS'
QUALITY ITALIAN QUEENS

That stand the test for honey-gatherers; gentle; prolific; bred from hives making 300 pounds, or over of honey. Health certificate with each shipment. Prompt live delivery guaranteed.

QUEENS: 1 to 99, 75c 100-up, 65c 1 or 1000
TESTED QUEENS: ..... $1.50.

FLOWERS BEE COMPANY
Phone Juno 4-2830 or Juno 4-2837
JESUP, GEORGIA U.S.A.

OBSERVATIONS OF AN AMATEUR

(Continued from page 628)

with four colonies. We put in quite a little medicine and some dark honey and got back 124 pounds of light honey and 198 pounds of amber honey. Total 322 pounds.

Well we have taken care of these bees for three and a half years and got a little over 700 pounds of honey at about an hour of work per pound.

If anyone ever offers you bees on a loan basis, take them if you want work and experience. If you want money, get a fiddle and a tin cup.

LET'S TALK ABOUT HONEY PLANTS

(Continued from page 616)

plant and prairie dock on the great plains. They have composite yellow flowers resembling small sunflowers. The species referred to by Mr. Stephen is confined to the Atlantic slopes of Virginia to South Carolina.

Kentucky. Otis K. Wolfe of Harlan writes that he has a small farm in Virginia where he is experimenting with honey plants and has noted that bees work catnip better and longer than any other plant in the area. He adds, "Our basswood and sourwood here in the mountains were a failure this season. This was the worst season here in the mountains since I have been keeping bees. We had a hard freeze about the 10th of April which may have had something to do with it. This was also a locust year and there is a saying around here that bees starve during a plague of locusts."

Rocky Mountain Bee Plant. In our recent trip through the West we were surprised to find acres of the blue bee plant lining the road in southern Colorado for miles and often extending back as far as the eye could see. It was also common in southern Utah and northern Arizona. Later we found both it and the yellow bee plant common in southern Wyoming and the blue bee plant extending well into southern Nebraska. An extra amount of rain in the western Great Plains and Rocky Mountain region has made most wild flowers much more abundant than usual this year. The flavor of the honey is said to be quite different from alfalfa and sweet clover, so much so that one beekeeper said his daughter would not eat honey containing a preponderance of that from Rocky Mountain bee plant.

TOO LATE TO CLASSIFY

ROYAL JELLY box of 30 capsules with 50 MM. Royal Jelly per capsule, $4.35 to beekeepers. Retails for $8.50; box of 1000, in bulk, $135.00. Postage paid in the U.S. Prairie View Honey Co., 12303 12th St., Detroit 6 Michigan.

FOR SALE—50 colonies with fall surplus honey, supers and equipment for 150. Wallace Rose, 913 W. 6th Ave., Flint, Mich.

HOW BEES HELP DAIRYING

(Continued from page 597)

in turn, provide a choice source of honey.

"We can make three crops of honey a year if the seasons are favorable," Connally points out. "The first crop is from vetch, the next from cotton and a third from sweet clover."

Dairying is one of the chief agricultural enterprises being stressed in Hopkins County by County Agent A. B. Emmons. "Clovers are important in providing dairymen with early spring pastures," he reminds. "Hop clover is especially good for building up strong colonies for the flow of vetch which comes a little later."

Connally has made as much as 200 pounds surplus from vetch in full bloom. Bees fill the supers in a big hurry.

He doesn't spend a lot of time with his bees. He keeps most of the colonies near the milking barn where it's handy to spend an hour or so working them between milkings. The honey extracting house is nearby to make it convenient for extracting and bottling the honey. Honey is packed in ½, 1, 2, 3, and 5-pound jars for sale to food stores.

Connally likes Carniolan bees. "They are more gentle," he says.

He started his dairy about six years ago and has a herd of 63 cows that are tops in milk production. Eleven of the cows produce more than 10,000 pounds of milk a year. Even though he may consider his beekeeping operations as a hobby, his bees are more serious about it. The 200-pound surplus for each of many of the colonies is convincing proof they consider it big business.

Canada's
National Monthly Magazine
for Beekeepers
Canadian Bee Journal
Streetsville, Ontario, Canada

BETTER-BRED QUEENS
Three Banded Italians
Queens remainder of season
70c each
CALVERT APIARIES
Calvert, Alabama

The Rush is Over

We can fill queen orders on time so requeen with good queens while they are cheap. Our 100 per cent SATISFACTION has been good for 46 years. Let us prove it.

Untested queens $ .75 ea.
50 up . . . . . .65 ea.
Tested queens, 1.50 ea.

Merrill Bee Co.

P.O. Box 115, State Line, Miss.

U. S. Savings Bonds come in all sizes . . . . . and grow bigger every year.

A TALK TO BEGINNERS

(Continued from page 621)

winter should have a minimum of 50 pounds of honey.

It is possible, of course, to winter colonies in single-story hives. It may be necessary, however, to feed the bees sugar syrup, if full combs of honey are not available. The syrup should be made of granulated sugar, two parts mixed with one part of hot water until all of the granules are dissolved. The syrup may be fed in a ten-pound pail with the friction top cover punctured with about 12 or 15 holes, made with a two-penny nail. The pail of syrup is turned upside down over the opening in the inner cover and an empty super placed on the inner cover to protect the pail of syrup, then the outer cover placed on top while the bees are taking the syrup.

WILBANK'S — ITALIAN QUEENS

For your summer and fall queen needs we offer you an outstanding Strain of Three-Band Italians and can furnish Select Young Laying Queens promptly on receipt of your order. Caged fresh from our yards and Rushed to you Prepaid by Air Mail

Prices

1-9, $1.00 ea. 10-49, 90c ea. 50 up, 80c each

Tested Queens ..... $2.00 each

Quality Does Not Cost — It Pays

THE WILBANKS APIARIES Claxton, Georgia

QUEENS

ITALIANS CAUCASIANS

We still have a few good young queens left for that late re-queening, or those queenless colonies.

PRICES

In lots of 1-24 .... 90c each

In lots of 25-499 .... 80c each

Tested queens ..... $2.00 each

Airmailed and/or clipped—no extra cost.

THE STOVER APIARIES

Mayhew, Miss.

LAST CHANCE!

DADANT'S STARLINE HYBRIDS

Reg. U. S. Pat. Off.

By the time you read this we will be closing in on our queen-rearing activities, but will be in position to fill orders for our fine queens possibly through October. THANK YOU, friends, for the nice business you have extended us, making possible another successful season. We are grateful not only for your orders, but the many expressions of your satisfaction with our Package Bees, Queens, and Service.

We're working toward the future with Faith and Confidence.

JENSEN'S APIARIES MACON, MISS. U.S.A.

"GULF BREEZE" ITALIAN QUEENS

PRICES

1-24.....90c each 25-100.....80c each

100 up.....75c each

BESSONET BEE COMPANY

Donaldsonville, La.

CAUCASIAN QUEENS

1 to 9, $1.20 10 to 49, $1.10

50 and up, $1.00

Howard Weaver

NAVASOTA, TEXAS

Booking orders now. Over 30 years a shipper. Send for Free Circulars.

BLUE BONNET APIARIES

Weslaco, Texas

J. E. WING & SONS

43 Years Continuous Service

Italian Package Bees and Queens Our Specialty

Knights Landing, Calif.

GARON'S TOP QUALITY QUEENS

For the Balance of the Season

Dadant Starline Hybrid Queens		Garon's 3-Banded Italian Queens
1-24	$1.30	90c
25-99	1.20	80c
100-up	1.10	75c

Upon request queens clipped and marked free.

GARON BEE COMPANY **Donaldsonville, La.**

YORK'S QUALITY BRED QUEENS

Your Choice of Two Outstanding Strains

DADANT'S Improved Starlines or
YORK'S Quality Bred Italians

Italians		Starlines	
1-24	$1.00	1-24	$1.30
25-99	.90	25-99	1.20
100 up	.80	100 up	1.10

The Preference of Leading Honey Producers

Reg. U. S. Pat. Off.

YORK BEE COMPANY **Jesup, Georgia**

(The Universal Apiaries)

CONSIDER THE EXTRACTOR

(Continued from page 607)

tems have their radii as 1:4 and their centrifugal pressures equal for equal masses then:

V1 squared ÷ r = V2 squared ÷ 4r
and 4V1 squared = V2 squared
therefore:
V1 squared:V2 squared: :1:4

Tremendous centrifugal force accompanies high velocities, its increase being in the ratio of the square of the rate. I.E. a very slight increase in speed increases force very rapidly.

A five pound comb working at six inches from the spindle will develop a pressure of fifty pounds at 242 r.p.m. and will travel twelve feet eight inches per second.

Perhaps now you will look at your extractor with new respect.

CARNIOLAN
and
CAUCASIAN

Requeen with Carniolan or Caucasian queens for good wintering, gentleness, quick build-up in spring, best of workers in cool weather. Queens through October, $1.35 each Air Mail; $2.00 to foreign countries. Quantity discount.

W. D. REAMS
Box 87 La Belle, Fla.

LITTLE'S ITALIAN QUEENS
ROYAL JELLY

Booking orders for 1957 season.
1 to 24, $1.25 25 to 99, $1.15 99, up $1.05
Write for jelly prices.

LITTLE'S APIARIES

P. O. Box 122 Shelbyville, Tennessee

"The Australian Bee Journal"

Published by the Victorian Apiarists' Association at the beginning of each month. Subscription 10/-per annum plus 2/6 postage to overseas countries.

Box 167, Rainbow,
Victoria, Australia

SOLD out of all
Bees & Queens
for 1957

CLOVERLINE APIARIES
P. O. Box 5126
COLUMBIA, S. C.

QUEENS

KELLEY ISLAND queens will be available until early November. This is your last chance to requeen those hives and have booming colonies next spring.

1-24 ..... 85c by prepaid air mail

25-up ..... 75c by prepaid air mail

THE WALTER T. KELLEY CO.

Clarkson, Ky.

U. S. Savings Bonds come in all sizes . . . . .

and grow bigger every year.

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